

AVIATION WEEK

A McGRAW-HILL PUBLICATION

JUNE 23, 1952

50 CENTS

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for the "Cutlass"**



(Photo courtesy U.S. Navy)

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NEWS DIGEST

Domestic

Gen. Hoyt Vandenberg, USAF Chief of Staff, is reviewing rapidly from an older age, he may not be able to assume more official assignments for a few weeks, we sources close to the general. An Air Force spokesman has stated that Gen. Vandenberg's consciousness is satisfactory and he can spend a few days at his Ft. Meade, Md., residence soon.

Cessna B-46 caught fire and was almost completely destroyed while being tested at Cessna's Fox-Deepe plant. No one was injured. Damage is reported to reduce the lot to less than \$1.5 million.

William C. (Bill) Hoff and June 14 following a heart attack, while at home in Lake Hopatcong, N.J. The 50-year-old aviation writer was a member of the Aviation Writers Assn. 12 years, was formerly with *Flyer magazine*. For the past four years Bill served as vice president of Technical Div., aviation technical annual publications.

Prudential and insurance plane shipments during April by air firms totalled 270, with dollar value being \$3,144,000.

Ralph E. Bell has been appointed head of Boeing Aeroplane Co.'s sales organization, succeeding Frederick R. Collier, who resigned to take a high position with a Seattle corporation. Bell has been a Boeing sales engineer since 1946.

Fine Goodyear ZPN airship was scheduled to arrive at Lakewood, N.J., Nov. 11, lighter-than-air but, with work from its home port, Alameda, Calif., Navy officials reported. The ZPN is 214 ft. long, holds 75,000 cu. ft. of gas but has two Wright R-1820 engines.

Elmer N. Smith, former special assistant to CAA Administrator Charles F. Flora, and with CAA since 1946, has been named Regional Administrator for Region 9 (Pacific Islands) with headquarters in Honolulu. He succeeds W. E. Klein, retired.

Stiff tests covering more than 100 conditions have been completed on a Northrop F-89 Scorpion all-weather fighter. In the Structural Test Laboratory at Wright Air Development Center, Dayton, Del., the aircraft has been tested up to 190% of its load that might be expected aeronautically; critical conditions were tested to destruction.

Douglas DC-7 power packages will be



TWO RUSSIAN JET BOMBERS have the Hillsboro shield from the boundary between the Soviet and French section of Berlin, posing considerably closer to a group of German buyers. This modest package cost the same seven of our leaders

bought by Rader Aircraft Corp., Chula Vista, Calif. Initial order is for 112 planes, adds approximately \$10 million to Rader's order book of \$12 million backlog.

Aircraft aircraft in U.S. numbered 34,339 as of Jan. 1, with more than 50,000 single-engine types. There are approximately 1,700 transports, 240 fighters and 122 trainers. Airlines operate 14,731. In addition, CAA has on record 34,326 air taxicab airplanes. Pilots are required to use Standard Symbols of U.S. Civil Aircraft as of Jan. 1, 1952.

CAR Makers Joseph Adams was scheduled to leave Washington last week for a much-anticipated tour of the troubled Alaska oil center stricken off the coast of Bremerton, Wash., to interview W. E. Kline, retired.

Damage costs totaling \$752,000 have been filed in U.S. District Court against TWA and National Airlines. Half million-dollar damage was sought by the airline, and Cason L. Lutzow, attorney in the case, of a TWA office in Cleveland, charged that the suit was brought to collect \$325,000 by the widow of Mac E. Field, who died in Feb. 11 crash of an NAL airplane in Elizabeth, N.J.

announced. The two unidentified men are believed to be in Boston design strength staged with expert talk. Wings appear to be placed considerably below the center of the fuselage. A very notable bulge marks the fuselage's bottom.

Financial

Panama Helicopter Corp., Moscow, Fla., in 1951 received sales of \$26,366,872, more than four times 1950's total. Net income for last year was \$2,195,550. Budget as of Dec. 31 was \$11.0 million.

Airlines Clearing House, Washington, D.C., reports April billings of \$13,815,484, a 21.6 increase over 1951.

Tomas Aircraft Corp., Dallas, disclosed a regular airplane division developed for the tenth on capital stock, dividable, payable June 10 to June 20 holders.

International

Two Russian jet fighters reportedly shot down a Swedish Air Force Catalina over the Baltic Sea June 26 while the latter was searching for a missing Swedish military transport. The crew of seven was rescued.

Vidarbha Supermarine 508 twin-seat fighter has come out easier open after trials with British Miles Eagle. The 508 has two Rolls-Royce Avons.

Pugachev P-145 has won an Italian Air force competition for engines powered by Licensing engine (AVIATION WEEK, June 8, p. 15). Pugachev reportedly is building engines under license.



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BY DETERMINING COMPATIBILITY TESTS
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AVIATION CALENDAR

June 23-27-American Society for Testing Materials 10th anniversary meeting, Statler and New Yorker Hotels, New York.

June 24-26-Jetison and engine analyzer conference, sponsored by Scientific Manufacturers, Inc., Borden Aviation Corp., Brooklyn, N.Y.

July 1-American Meteorological Society general meeting, including joint sessions with the Institute of the Atmospheric Sciences, Sand Shirley, Shirley, N.Y.

July 2-5-Northwestern States Surveying Meet, Idaho, N.Y.

July 4-9-South Miami all women aircraft meeting, and race, Boca Raton, Fla., Calif.

July 6-12-Vietnam War annual convention, Anchorage Hotel, Los Angeles.

July 14-Regional air safety forum sponsored by Corporation Aeronautique Générale S.A. (SAG) and CAA, logic to be
Waukegan Flying, Lake Airport, St. Louis, Mo.

July 16-19-Institute of the Aerospace Sciences annual convention, Clarendon, Mass.

July 21-26-Silver anniversary celebration, Paris College of Aeronautical Technology, Park Airport, East St. Louis, Ill.

July 26-31-University Airlines Ann 10th annual meeting, Bell State Teachers College, Marion, Ind.

Aug. 11-13-Society of Automotive Engineers national Meet Coast meeting, Fairmont Hotel, San Francisco.

Aug. 27-30-National Flying Seminar and meeting, Alabama Polytechnic Institute, Auburn, Ala.

Sept. 18-Sept. 1-International Aviation Show sponsored by Am. Club of Malesherbes, Chelles, Courances Motor Track, France, Major Airport, Paris, France.

Sept. 8-7-British Aircraft Gas turbines annual display, Farnborough, England.

Sept. 4-6-Confidential Engineering Seminar, Illinois Mathematics, Chicago.

Sept. 8-12-American Society of Aviators annual national instrument conference and exhibit, Cleveland.

Sept. 14-15-American Fed. Federal Airport Miles, Calif.

Sept. 15-16-International Air Transport Assn. eighth annual general meeting, Geneva, Switzerland.

Sept. 28-Oct. 1-National Electronics Convention, Sherman Hotel, Chicago.



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—Inset Photo: 18-Boeing 747-200, Boeing Co., Seattle, Wash., 1970. Boeing Co., Seattle, Wash.
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Aircraft In the News

SH-1 RAISED-Helium VH-3D (right), being prepared for Army Field Trials, is shown in its original form which reveals slender arrangement for handling low windload, and pilot seated on separate deck. Known interest permits carrying personnel for taking out of readiness in flight. With normal motor it had the TH-33 climbs over 1300 rpm.



GROUND STRIKE—Marine Corps Vought A-7 Corsair (right), was developed to meet the need for a ground support aircraft similar to the earlier F4U models, the A-7 has had an high thrust engine blower installed, more intense protection added to cover licensing engine ground. (See Aviation Week Apr. 7, p. 12.) A long range auxiliary tank under the fuselage permits the new Corsair to spend more time on support missions.



TINY STUNTKE "Horn-snake" Convair Special variable in flight (left), designed by Gene Goethals, spans just 16 ft., is 12 ft. long and weighs 540 lb. empty. Climbing speed is given as 100 and top speed at 170 mph. Named "Angel Bitter," the plane is painted by an 18-1/2-year-old. Wing construction is plywood, fuselage is built of tubing. It is a single-seater and reportedly can fly 10 hours. Presently, Gene Goethals, Calif., was participant of Young Pilots Invitational, Cape May County Airport, N.J., is along \$2,160 for the plane.

Remington Rand Methods News

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Let us show you how one plant, with little extra effort, gets complete distribution of all direct and indirect labor. This includes guaranteed cost rate base on each job. Their prompt job reports show labor, material, total cost, and the difference between actual and standard cost. Other by-products of their profitable punched-card methods are accurate departmental cost reports by employees, improved control of materials, performance reviews with bonus incentives, and future savings with bonus incentives. Ask for illustrated case history folder 84-N.



Good to know tool checks! "For years," reports a foreman, "we had trouble with old-fashioned hand tool checks. They would get knocked off their banks and wind up. On the hurried occasion we'd return a check with wrong employee number on it. Now we have a Remington Rand visual system which checks tools to prevent errors. Back tool center can keep its records easily and accurately, reducing General Stores of the paperwork. What's more, this foolproof system guards against a shortage or overstock on any tool." Let us show you simple methods of tool cost control to reduce your tool costs and save the valuable time of both productive time and non-productive employees. Ask for folder KD-941.



Cutting in smaller plants. "A new supervisor was associated with the thought that there was no reason for us to have a separate cost control department. But we were running six weeks behind on the annual cost analysis for the wages of our 150 plant employees. So we were glad to learn about Remington Rand punched-card methods. Now we get faster distribution reports promptly on each production run—with a breakdown for task operation and cost per hour in the run. Also, by adapting that method to sales analysis, we get prompt reports on our hand-to-control LCM cutting costs."

See for yourself how simple that low-cost Remington Rand method can be applied to small to medium plants. Ask for folder E-10. For dissemination in your office, as well as folder 84-N.

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There are few areas where labor productivity wiped out overtime and cut by half the liquid base for payroll year ending. To handle this, many years ago Remington Rand developed a unique plan to reduce the load of task orders you write to hire more, tell us above you how we have helped many plants reduce costly machine breakdowns as well as inventories.

Moder a brief but profitable study of the preventive maintenance records and procedures used by ten well-known industrial firms. Ask for a ten-day free of use case history folder E-10C-T22, and for your copy of new folder K-1705.

For information, please request Remington Rand methods. Call our Remington Rand Reference Library or your city, or write to our Management Controls Reference Library, Room 1162, 125 Park Avenue, New York 10, N. Y.

Look for ideas from the **Remington Rand Management Controls Reference Library**

WHO'S WHERE

In the Front Office

T. R. (Tom) Smith has been named vice-president of Aera Design & Engineering Co., Tulsa Airport, Oklahoma City. He will continue to hold his previous responsibilities as general manager of the firm.

Robert D. Kinney has been designated assistant to the president of the National Association of Manufacturers as CAPFA director of Median sales since late 1951, when he resigned to rejoin private business.

T. R. Culbreath has been appointed assistant to the president of American Engineering Corp., Woodlawn, N. Y., which develops and manufactures aircraft instruments and controls.

Howard J. Keeth, president of America Air Export & Import Co. Inc., has been named temporary president of the independent Motor Air Transport Assoc., influential organization of present president G. E. Clark of the Clark Corporation. Clark remains a member of IAMCA's board.

Changes

H. R. Allison has been named assistant to the manager of Westinghouse Electric Corp.'s Aviation Gas Turbine division, St. Philadelphia, Pa.

A. B. Shulman has been named controller of operations of Lincoln Financial Assurance Company, which is affiliated to IFAC's chief executive, Peter Mansfield.

J. T. Berger has been designated director of industrial relations for the branch of Pechiney Aluminum Corp. He will have his headquarters in Newark, Calif.

Henry C. Hahn, formerly a consultant for Hughes Aircraft Co., succeeds E. T. Van Holten, resigned as general manager of Convair Division Co. Inc., Newark, N. J.

Dave Colborn has been made administrative director of the South American branch of ITT Al Italia Airlines, succeeding Dr. Silvano Feltri who is returning to Palermo.

What They're Doing

Dr. Alan Green, R. M. Calfee professor at the David and Florence Dubin Graduate School of Management, Princeton University, has been appointed as the chairman of Radiation Control, Inc., Princeton, N. J.

Forrest Clegg, who recently completed his post as director of research and development post with Glenn L. Martin Co., has established himself as a corporate finance representative and material consultant. His offices are at 1120 County Square Building, Silver Spring, Md. Phone is Plaza 7-1735.

Honors and Elections

Oron M. Nelson, president of Transamerica Corp., has been awarded an honorary degree of Doctor of Science by Ursuline College, Toledo, Ind. "It is his leadership in pioneering a new concept in air transportation."

Robert L. Shand, former president of Chamber of Commerce of N. Y., and a partner of Sanderson & Foy, has been elected a director of The American World Aircraft

INDUSTRY OBSERVER

►Vickers-Armstrong, Ltd. says its Vickers turboprop transonic Avrofan, Notland S. Trans-turboprop 6, Aire France 12 and BEA 16, Company will have capacity to turn out four to six Vickers 16s a month by the end of 1953. First production model will be delivered to BEA next October.

►De Havilland has six new fine-silvers for Concorde, making a total of 51. Recent additions haven't been announced, but it is a good bet the buyers are Australians.

►Despite some military and industry thinking to the contrary, USAF's Office of Flying Safety reports the Convair B-36 has one of the lowest accident rates certified by any single type since the bomber made its first flight in 1946. This record is even more significant when it is recalled that it was and is the biggest operational plane built, and that it must take 200 passengers without the usual results of flight oscillation and tailfins.

►Effects of heat on spin whipping are beginning to be of considerable concern to the Air Force as speeds move into supersonic ranges. Weapons Components Div., Wright Air Development Center, reports that whips will burn twice after exposure to 300° F. for 3 hrs will melt at 453° F. and will burn at 585° F. When heated for 30 min. at 598° F., it loses 50% of its strength.

►Wright R1340 engine, rated at 800 hp, is being ground in the power plant at a new series of the Sabre II-H-19 Air Force helicopters, which now earn the 800 hp. Pratt & Whitney R-4360 engine, the 740-hp Wright R-1820 engine has a sound of more than 113,000 flight hr. in two years of military operation in North America T-33 trainers.

►New military requirements for jet-engine preliminary flight testing will have more emphasis on demonstration of engine safety for flight, rather than the usual endurance demonstration, if recommendations of U.S. manufacturers to the military are followed.

►Small boats in small place civil ordnance continue, with both Census and Pipe dropping off production schedules of these four-plume to take care of increased orders.

►McCollum Corp. plans to get its first MC-4C production civil helicopter completed in July from its modified safety and civil production. New gear first two in June, Army gets six in July, two in August.

►CAA has decided that the fighter machine rating is no longer necessary and has deleted it from CAA Part 2 (done 15 revisions). Revision is based on the fact that revised CAA Part 18 permits a manufacturer to rebuild or alter products for which he holds a type or production certificate in which are unadvertised by him under specifications approved by CAA, so that the rated factory certificate is no longer needed.

►There is industry speculation that the B-57 Avenger entry in the forthcoming jet power TX competition will resemble more than a little the twin jet aircraft, an aircraft described by British design engineer H. M. Heron in a recent IAS paper at Wellingborough, Eng. (Aviation Week Mar. 24, p. 14).

►Mostly disclosed now for the widely distributed Pratt & Whitney R2800 engine, rated at 2,400 hp will be the new Sidewinder S-56 two-engine helicopter, no code for the Marauder at the HILCS. This means the S-56 will have more power than any U.S. piston engine helicopter yet developed. In combat competition, the big Air Force Francis XII, fitted with two P.W. R2800 engines rated at 1,650 hp each and the Bell XHSL-1, autogyro copilot, powered with one K2800. The S-56, newest Marauder approach to a tandem rotor, is being eyed with interest as a future commercial air vehicle.

Showdown Near on Air Power Stretchout

- Quicker buildup called matter of 'life or death.'
- Congress may up funds, lift spending ceiling.

The Senate committee on armament funds has, for now, rejected last week by the Senate Appropriations Committee, its proposal that "overriding powers" be given to a quick buildup of air power.

The committee which is headed by Sen. Lyndon Johnson, made these justifications:

"The question of an adequate air defense for these United States is a question of life or death for ourselves and our neighbors. Our defense leaders believe that our defenses are not adequate and are not at the level to do better."

The figures on our overall investment at the start of the Korean war and at the present time leave no room for comfort . . ."

"We have increased the best estimates of Soviet production and capacity for production. They are shockingly large . . ."

"No decisive victory in Korea will sustain us as long as the Soviets hold in Germany, Italy, and military theaters, thus do not relax . . ."

Most Step Up Funds. At the late date it is impossible, that the whole idea which would permit a fast increase of the air strength beyond necessary by mid-1954 can be established, but everything must be done to step up rates of production to a point where we can reach in quickly to present strengths recommended by the Joint Chiefs of Staff.

Reducing the total number of planes to be produced annually under the existing law will increase the unit cost per plane by 2.5 to 3.5. The overall cost of stepped-up aircraft production will be lifted. This would draw plants and other deliveries, because the services could be held down on spending. Opponents of the cutting have effectively eliminated it as a "economics" measure. Showdown of aviation rate increases will cost the government in the long run, but the Joint Chiefs of Staff are more than willing to take some money. We must not divide credits so that it will. The hard goods will cost more though less cash will be spent on that final year.

"That profit production schedules were set out is no excuse for freezing

Air Power Funds for Fiscal 1952

(\$ Millions)

Category	Funds	New 1952 Actions	Obligation		Carry-over
			to Apr. 30	Mar. 31	
USAF					
Aircraft and Related Procurement	193	\$1,200	7,350	3,800	200
NAVY					
Construction of Aircraft and Related Procurement	7,800	7,800	800	None	
State Department of Defense					

our goal. Defense should not be the criterion for the budget."

The Defense.—Thus the Senate took stock of aircraft funds.

Part of, not all, of the \$710 million allotted by the House from Air Force and Naval Aviation plane procurement money will be restored. House can back the President's recommendation of \$2.5 billion for USAF to \$12.7 billion, the \$1.6 billion for Navy Air to \$3.5 billion. It is likely the House will go along with a reduction of some, but not all, of its assigned \$710 million cap.

Navy will be allowed to go ahead with construction of a second 60,000-ton fleet deck carrier, based by the House. House is expected to agree in final form. Navy has made it clear it is willing to use funds from other shipbuilding projects to go ahead with the carrier.

The \$40 billion ceiling on defense spending charged on in the House was certain to be lifted. This would draw down plane and other deliveries, because the services could be held down on spending. Opponents of the cutting have effectively eliminated it as a "economics" measure. Showdown of aviation rate increases will cost the government in the long run, but the Joint Chiefs of Staff are more than willing to take some money. We must not divide credits so that it will. The hard goods will cost more though less cash will be spent on that final year.

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That profit production schedules were set out is no excuse for freezing

aviation construction which starts July 1 and wants to clear up all business before then.

But continuing with the new money for plane buying will not get off to a slow start. Therefore, the services move clearly at the start of the fiscal year, step up construction in the months to go by.

The Senate committee's report is considerably more lenient in part, by the time goes on U.S. aircraft procurement, receiving a proposal by the President.

Administration Veto.—According to the President's report:

Now we have an Air Force of 91 wings, with a million men in flight and nearly 15,000 planes in active use.

The goal we set in 1948 called for a 35-wing Air Force by mid-1952. Much use of those wings are now operating with men and better planes coming into service at the rate of 100 a month, we expect. The first remaining wings to go into use will be:

"In the last two years we have had a total of the aircraft industry to produce the best planes being built anywhere in the world. And we are having them out at better than four times the rate the Korean war. . . . A lot powerful as these are, we should increase, and we are going to have one. . . . We are making progress in building one more aircraft here at home without in any way undercutting the winds of the forces in Korea. . . . We have been able to man-

turn an impressive ever more of North Korea.

"The reason we can knock the enemy at will, almost anywhere in his territory. At the number bases on the Yalu River, we do not have superiority, but we do have clear superiority in air power—which means we can knock out objectives, sans thought or fight, if appropriate."

The President's speech was like the cover of yesterday's report. Sen. Robert Taft's criteria of the Administration for U.S. bid of its superiority, the Johnson Committee's report, to influence the Senate on funds. For planes.

Two Are Convicted In Procurement Case

Denton, Okla.—A Chicago gilder and a former Air Force pilot were convicted of conspiring to defraud the government in the conclusion of a multi-year bid of U.S. District Court here.

Defraud counsel submitted appeals will be heard by the Court of Appeals.

The convicted were William J. Opper of Chicago, a dealer in wet glories and ski goggles, and Robert G. Hollifield Sr., former project officer in the Aero Medical Laboratory of Wright Air Development Center at Wright-Patterson AFB.

Opper-Hollifield.—Opper and Hollifield were charged with making a bid for purchase of 100,000 goggles and gaiters. Opper, 45, and Hollifield, 46, were indicted on May 10, 1951, on counts aggregating more than \$4,500. Each was convicted on five felonies each.

This is the third case locally and the fourth nationally which grew out of alleged procurement irregularities. An Air Materiel Command bid and Canadian aircraft procurement previously were convicted in this same court.

At Air Force Capt. Jerry Mischke's trial, former buyer in the Procurement Division, was found \$1,500 and given an official assignment after a court martial fixed his guilty on six counts of accepting gratuities. He was found innocent on five other counts and a charge of negligence in violation of Air Force contract regulations. The case is to be reviewed by the AMC judge advocate and the AF Board of Review at Washington.

F-B6F Sales Delivered

Four groups of F-B6F Sabre jet fighters have been delivered to the 48th Fighter Squadron, Strategic Air Command, Offutt Field, Neb. The F-B6Fs' 147th CFS at Offutt has sent 10 more aircraft from their original order, though it is "very active," a committee spokesman reported.

Charges Against K-F Retracted

Rep. O'Konski says Kaiser reply refutes allegations of extravagance, excessive costs and "influence."

By Katherine Johnson

Kirkland.—They are lightning bolts of Senator's rebuff.

In a letter to plaintiff Charge, Inc., it is not practical to single out today as USAF contract for IV-C133 aircraft.

There were three developments:

• O'Konski admits. After studying an 8-page affidavit by Kaiser to change made against him as a basis for suit, Rep. Alvin O'Konski, who made the Johnson Committee's report, to influence the Senate on funds. For planes.

• Another C-133 contract. The first C-133 is scheduled to be delivered during September, 1953, or 16 months after the date of the award of the contract. It is not understandable that 20 to 22 months is considered as the normal period of delivery between award of a production contract for an airplane or which the delivery has been completed and the date of first flight.

• Another K-F133 contract? Charge, Alvin K-F133, has been set produced a C-133. USAF has yet a lot of work to do. No contracts have been awarded a contract for 250 additional planes because it is "necessary in order to help K-F in other negotiations."

Reph. "Neither K-F nor Charge knows of any other letter of intent" nor of any "other negotiation" for which such a letter would be "necessary." We check the report of an informant in the C-133 program is true. It is a good impulse and we would be happy to farm as much as we can on the Air Force work to help K-F.

Extraneous advertising.—Charge's 15 post-extravagances are held at Willow Run plant; two results are held for the purpose. Air Force officials and press were briefly interviewed. Chargeover overflowed the banks of Willow Run.

Reph. "Traditionally, K-F holds an employee funds dry open house. On May 5, the deduction of the first K-F assembled Pratt & Whitney C-133 plane and the traditional dry open house. (2) We are told that the Ordnance Service, stockholders of Ordnance & Co., one of the key firms producing the equipment behind the scenes, K-F has a seat at the Ordnance & Co. table, besides the Supreme Court, involving D-3's last-minute refusal to withdraw a \$10 million K-F stock offering. A dry open house, a federal contract awarded K-F \$35 million. Ordnance & Co. is also under investigation by Security and Exchange Commission and National Association of Securities Dealers in connection with the case.)

• Bid manipulation continues. House Armed Services Investigating Committee is looking the Kaiser investigation over again, though it is "very active," a committee spokesman reported.

Reph. "The first C-133 was delivered to and accepted by USAF on May 1. Therefore, avoided costs to date on the first C-133 are not yet available. K-F's record costs to date evidence that the costs were in excess of previous average costs for that type of aircraft. The C-133s held by K-F

have no intention reengaging and design changes, as well as a completely different power plant from those being built by Pratt & Whitney. The number of charges, including detailed plans, is in excess of 6,000.

• Business by influence? - George Kauer manages to tactfully defuse simply by pointing his own key men in proper departments of government.¹⁴ For example:

- Charge: Clay Bedford "took a leave of absence in early April of 1971 to become assistant to former Mobley State Director Charles Wilson, and still later, spent several to the State of Delaware." - New York Times is president of Kauer's City Associates.
- Defense, MSA differ on when it will start.

Differences of opinion as to how close the proposed purchase of European military aircraft by the U.S. is to reality breed in Washington left week.

Some top Defense Department officials say the recent statement by Mutual Security Administrator Elmer Glass to key committee plans from European manufacturers "confused and complicated" purchases.¹⁵

To put such plans on a certain road, these officials said, would only irritate existing aircraft programs and new jet getting underway in the U.S. This placed in the still very short supply of machine tools and engineering shortages on some critical materials, and the audience in Congress is to how many dollars can be invested in defense procurement.

Charge: John McCloskey - "While USAF doesn't buy (for AF) it is not worthy of having him in his position of president of Bechtel-McCloskey Corp."

The Bechtel family happens to be holding of 4,200 shares of KSF since 1964.

McCloskey gave Kauer his first big Air Force role building 150 B-52H planes.

Reply: Mr. McCloskey did not

name any contractors to KSF Corp. Contracts for aircraft were negotiated with and awarded by Headquarters Air Materiel Command at Peterson AB, in accordance with usual procedures.

Mr. McCloskey said as best he knows on the maples of KSF Corp., or any company which is owned or controlled by Elmer Kauer... - Bechtel-McCloskey Corp does not now own but it once owned an interest in KF Corp. - We have no knowledge regarding Mr. Kauer's entry and ownership, except, maybe to say that KF Corp., Mr. Kauer and some of his company's stockholders controlled by the Kauer interests had my being whatever to do with Mr. McCloskey's appointment.¹⁶

Charge: Warren Hellf - "A loss of about six percent in purchasing power of KF is becoming evident to the Administrator of Defense Production Administrators."

Reply: "Warren Hellf is not on leave of absence from KF Corp. He has definitely served all contacts with the company."¹⁷

chief of the United States Mutual Security Agency, Tokyo.

MSA has long tried to convince the military services and, in particular, the Air Force that a definite program of aircraft and other hard goods procurement from friendly European nations would serve a two-fold purpose:

• It would stabilize the industrial base of the Western Bloc.

• It would negate any mounting need for the so-called Americans overseas who play what is appropriate both in the U.S. and abroad.

Defense Department is in complete agreement with MSA on such a program, but there would have a less effect on the economics of the European nations concerned. However, officials told Aviation Week, "negotiation of such a plan now would only affect a further reduction of military aircraft programs in the United States just now getting underway."

► DMDP - Purchases - Defense Department, under terms of the Mutual Defense Assistance Program, chart military aircraft production with nations allied under the North Atlantic Treaty Organization. Through the agency, DMDP procures aircraft from the U.S. and allied while at the same time the US is losing its NATO members one at a time.

Chief objection to this plan by friendly European nations is that while their defense strength receives a boost, the production potential of the industry behind an individual nation's air power remains dormant and in fact the potential shrinks.

For example, The Netherlands government states, the U.S. contacts in The Netherlands are only for seven aircraft and no indication of any U.S. production support. Then, the two governments a total of \$2 billion sets the ceiling, offering a restrictive economy, but let's do nothing to stimulate industry. The same is true in France and Italy.

► Elmer Avera - Sea-Delco officials explain that putting any European or craft contractor in production on a fighter plane at the present time could be done only by establishing a plant and program them in producing a fighter plane in the United States. Then do we remember, however, that this division will hold two per year after 12-18 months initial tooling and natural obsolescence?

Once the grins of the 143 wing program are thoroughly washed and industry is able to meet timetable schedules, Defense Department sources say, then we strengthen our industrial "base across the sea" program.

U.S. is committed, in the case of the Air Force, to maintaining a combat strength is sustained NATO force operating in Europe.

Foreign Buying

- Hague report says U.S. to buy Europe's planes.
- Defense, MSA differ on when it will start.

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100 Million Daily

- That is present spending rate for AF, Navy planes.
- But it is just to clear '52 funds before June 30,

By Alexander McNamara

Air Force and Naval Air procurement offices have been passing out statements at a rate of about \$100 million a day for the last two months in an effort to complete fiscal 1952 fiscal year procurement programs before June 30.

USAF officials say that as an old general authority for aircraft and related procurement for fiscal 1952, plus a carryover of \$15 billion from previous years. Meanwhile Navy had \$13.5 billion new obligation authority, plus a carryover of \$3.4 billion from previous years.

Department of Defense totals show that in April 30 the Air Force still had \$55.5 billion left to obligate for aircraft and related procurement, while on the same date Navy had not obligated \$9.8 billion available for construction of aircraft and related equipment.

Estimates on April 30 showed that the services expected to oblige about that amount in the remaining two months.

However, a more recent USAF check shows that approximately \$2.6 billion was obligated in May, with \$2 billion more expected to be committed in June, leaving an unobligated Air Force balance of \$100 million for aircraft in June 30.

► Nothing - Now-BE is estimated that Navy obligated about \$300 million of its annual budget as May, while June figures have not been obtained.

Air Force funds obligated as of June 30 was near the half-billion dollar mark, or even higher, some analysts expect.

Both heavy ordering at the end of a fiscal year is nothing new. The armed services have been doing it for years. One obvious reason is to beat the old complaint from Congress when next year's budget comes up: "Why should we appropriate all this new money? You didn't obligate what you had last year."

Another reason delayed technical decisions - the large obligation at the end of the year, the easier it is to tell which plane or which engine to buy, procurement of funds won't cost.

► Future Shows - Finally, comes the time, however, when getting the orders out takes precedence. For example, if USAF succeeds in obligating the remaining \$3.3 billion in the last two

Combat Pilot View of MiG

(Editor's note: George L. Gherman, AVIATION WEEK'S Equipment and Maintenance editor, brought back his following observations on the MiG after a four-day visit to Korea.)

Here are some observations on the MiG-15 made by a wing commander of an F-86 squadron based at the front lines in Korea. (He because an air he has to call it Aviano, W.W.)

Sometimes the MiGs suddenly refuse to come up and fight. On occasion we will see two to three planes from the MiG's base. Frequently four or five. Two were principle shot down.

There is every indication that the Reds have a flight fighters, possibly a night version of the MiG.

► So So - Changes - MiGs are not static aircraft. Our planes have noticed some improvements in the plane over it was first used in Korean skies. Among things noted are a more raised tail assembly. Original models of the MiG would commonly roll their wings at high speeds, this is stopped.

The MiG must have boosted controls to be in maneuverable as

such, it will have altered apparently one-third of the total obligations authority for the whole fiscal year. And a similar pattern of alteration of fresh checks up on procurement obligations in previous years.

► USAF - Still only on these 1951 obligations - As quoted, tells the same story. In the last three months obligations \$1.5 billion. This dropped to \$1.3 billion for the second quarter, and to \$1.5 billion for the fourth quarter.

The size of many U.S. air power is told nonetheless, in the figure for expenditures which makes the manner that is being paid off the aircraft previously acquired and which is presently being solved.

► Another - Monitor - For fiscal 1952 the Air Force's aircraft expenditure is fixed 1952 and 1953 by quarters shows a steady progression toward, as the case is the huge U.S. aircraft production backlog to intercept and the production line still. This is the way expansion is going up.

► 1952 fixed rate - First quarter, \$74.7 million, second, \$75.5 million, third, \$1.16 million fourth, \$1.20 million.

► Fixed-Time - In this case, the effects of the war would not be felt very directly on expenditures for finished aircraft, because of the long lead times. Instead, as pointed out to the Senate by Air Force Secretary McNamee and other defense officials, the deficiency will show up later on, pushing the



FWK-9 EATHERED

This is what happened to a Chinese jet fighter's port fuel tank when it ran out of fuel while making an approach at a Melbourne, Australia, airport. The Concorde tank was exhausted during the plane landed safely.

USAF's 145 wing Air Force six to nose them further into the future.

Fletcher appealed for cancellation of \$1.5 billion cut from the USAF budget, "in order to bring into being the much-needed 145 wing Air Force by the end of fiscal year 1955."

■ **Senate Amendment**—Warning about the effect of the proposed budget amendment, which would reduce Defense Department expenditures by \$1.5 billion, Sen. John Stennis (D-Miss.) in fiscal year 1955, Fletcher produced a chart showing how it would slash down modernization of the Air Force equipment.

It would reduce modernized wings at fiscal 1955 in about 14%, at the end of fiscal 1954 in about 25%, and at the end of fiscal 1953 by about 38%.

Fletcher said the expenditure cutting would mean the loss of modern equipment for 10 combat wings in fiscal years 1953 and 1954, would reduce aircraft production by 100 aircraft, and would delay delivery of all the aircraft which has now been obtained in the aircraft industry, "would not let the operational training level below a safe maximum for wings in being, would substantially reduce combat efficiency of these wings."

All New Pipers Use 135-hp. Engine

Piper Aircraft Corp., Lake Hopatcong, N.J., has modernized the 115-hp. Lycoming engine for all its aircraft, including the Pawnee, Tri-Pacer, Super Cub, and PA-18A agricultural type. The engines previously were powered with 115-hp. engines.

Increased performance and loads are made possible with the new engine installation. In the case of the Pawnee and Tri-Pacer, output will go up 5 mph to 110 and 132 mph respectively.

At 7,000 ft. net takeoff weight will increase 1,000 lb. to 1,400 lb. because of more efficient engine at low altitude, says Bill Harter, the company's manager. Allowable gross weight will go up from 1,900 to 1,930 lb.

The new engine is designated the O-200-02. It is rated at 135 hp at 2,600 rpm running a metal prop with 2.5 in. inter pitch than the 125-hp. engine.

Performance data for the new 135-hp. Piper and Tri-Pacer:

	PA-25	PA-18
Flight time	10 hr	10 hr
Cruise speed (cruise flight level)	115	132
Cruise ceiling at 1,000 ft.	110	132
Rate of climb (cruise flight level)	0	0
Rate of climb (cruise flight level)	0	0
Gross weight	1,900	1,930
Allowable gross weight	1,900	1,930

AF vs. Saucers

- Stories of new sightings bring fresh denials.
- But AF has new cameras ready to shoot on sight.

By Ben S. Lee

Bursts several of flying saucer sightings which have appeared in popular nationally distributed magazines is causing the Defense Department considerable embarrassment and denial and explanation of rumors at briefings to high officials.

In New Mexico, where the lights are frequently seen, Air Force scientists have made attempts to photograph the phenomena simultaneously from three different locations. Such a series of photographs might enable the scientists to determine, by triangulation, the size, altitude, duration and speed of the lighted areas.

■ **State Defense**—Skeptical of these phenomena, scientists have done the rounds of those cancer centers. In a few instances, a single cancer did obtain a tumor. The scientists were so successful, however, in their efforts to secure reimbursement expenses from these different points.

"The development of special photographic equipment may make it possible to gather data which can be obtained by ordinary photographic methods." This somewhat cryptic statement of Dr. George W. Bushnell, head of the Defense Department's Office of Scientific Research and Development, was made recently. "Others have not. With the present world we are in, we cannot afford to be non-plussed."

■ **600 Sightings**—The magazine said that Air Force had collected "some" than 500 sightings of flying saucers, and repeats caution to law in front of our experts like Alaska and Newfoundland and from our vital storage tanks."

What worries the Air Force seems according to the publication, is the fact that the public, who are not yet convinced of a saucer, "is becoming more and more skeptical." It pointed out that a number of communications duplicate exactly the series of stories being published.

As a result of this antiflagship, the magazine imposed a embargo on editor unattached in Washington.

In response to an Associated Press query on the current status of the flying saucer, the Air Force stated:

Secretary of the Air Force, Thomas K. Fadette, and other Air Force officials were unable to say in what connection the USAF administration of the flying saucer stories over the past five years.

■ **Official Position**—Fadette declined to say the leading conducted by air technical intelligence officers. "No concrete evidence has yet reached us either to prove or disprove the existence of the so-called living stars."

"These remain, however, a number

of sightings that the Air Force investigators have been unable to explain. As far as this is true, the Air Force will continue to study flying saucer reports."

In addition, the Air Force is continuing its study of unusual light phenomena frequently reported over the West over the Southwest.

This is a phase of the continuing study by the Air Force into the nature of the various atmospheric effects. At the present time, it is felt that such phenomena could be the result of natural occurrences in the upper atmosphere which at yet are not understood.

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Air Schools Fight Losing Battle

Pilot, mechanic training wins support, but no funds; shortage of skilled avionics manpower increases.

Civilians pilot and aircraft mechanics schools in Washington are still in operation, but will be able to graduate less than 1,000 in a result of the cut-off in the GI training program. Of the current enrollment apprehending 3,000, fewer than 500 students are matriculating.

■ **Pilot schools**. From a total of 3,115 in 1945, the number of students dropped to 1,339 by the beginning of this year, and since has dropped at a rate of 6% a month.

Prospective students are being drafted. At Fairchild in obtaining the pilot schools to a limited extent, but basic flight training, but those students are not available to the schools due to the possibility of utilizing mechanized aircraft instead. Now, students are all in the train-to-fight category.

■ **Mechanic**—Other prospective students fly from the high cost. In the one alone, it takes about \$3,000 for a student A & E course and about \$3,500 for a year's commercial pilot course. If students are having trouble with high wages in semi-skilled trades, and in many cases handling training wages.

The schools are a government-financed program to stimulate enrollment in their large corps for survival and the only solution to a major deficit is to increase the number of students which would be a dismal outcome. However, should we come to mid-1954 the Joint Chiefs of Staff target date for reduction,

Under a plan they have favored, the federal government would put up \$7.7 million a year to finance three fourths of the cost of training 15,000 A & E mechanics, 1,000 maintenance tech students, 3,000 electronic technicians, and 6,000 pilots—3,000 on contract courses, 2,000 in entrant courses, 1,000 in conventional courses.

■ **Pilot**—In high schools, students will pay for their studies and will put up the first month of their tuition as a bond to be cashed upon graduation. They remain available for military employment. The program, patterned after the old Civilian Pilot Training Program, would be administered by CAA. It has the full backing of all segments of the civil and military communities, sponsored by 12 national agencies.

Legislation authorizing the program has been introduced in the House by Rep. Carl Vinson, and Rep. Louis Stokes, and in the Senate by Sen. Wayne Morse, chairman of the Senate Armed Services and Foreign Committee.

This is the solution.

■ There is little chance that that legislation will get through Congress, even, perhaps, in its original form. It has appeal to House and Senate Interstate and Foreign Committee Committees. But the Administration and the congressional wings of Congress are against it. The House committee has held hearings, and Hushak hopes for favorable action by the group soon.

Individuals, the noncommissioned Army, the Air Force, the Navy, the Marine Corps, and the Coast Guard, all favor the plan which would be a dismal outcome. However, should we come to mid-1954 the Joint Chiefs of Staff target date for reduction,



GROUP PORTRAIT OF AMERICA'S RESEARCH TEAM

Teamed together in this unusual group picture are six of the ten U.S. research planes based at Edwards AFB, Calif. Left to right: Navy Douglas D-1902; McDonnell D-1901; Skystreak; USAF's Bell X-5; NASA's Bell X-1; USAF Convair XP-80A; and NASA

power, missile sweep, delta configurations and tailless aircraft at various speed ranges. On Oct. 14, 1947, the Bell X-1 became the first airplane in the world to exceed Mach 1 in level flight. This X-1 is now exhibited in the Smithsonian Institution.

passed through the House without further action.

On the Senate side, Johnson is working to see that the House does before scheduling action by his committee. • But there's even less hope that soon for the program will get through that Senate or Congress—in either session in the foreseeable future. And the administration would nothing without the money to implement it. House Appropriations Subcommittee on Commerce Department, headed by Rep. John Rooney, D-N.Y., passed what is to be of funds for the program "to the nation" and a pair of key programs to benefit the airline industry at this category.

With Budget Bureau opposed to the program, funds for it won't be appropriated by Congress. And it is certain the House administration will not volunteer these. Senate Appropriations Committee, more friendly to civil aviation development, can't originate appropriations.

► **How They Stand**—Testimony before the House Commerce Committee developed the following picture:

• Defense Department is opposed to the program, although its position was definitely stated by Rep. Guy Gobell (D-N.Y.), USAF's director of funding. It is understood that USAF took a friendly position toward the program, but that Navy nixed them down.

• Labor Department, with no basis found by the apprenticeship method, under its apprentice program—stated by private schools' Director of Law's Bureau of Apprenticeship, William Brinkman, overruled the fact that neither the schools nor aircraft plants have the facilities and staff to train A & T apprentices and pilots.

• Civil Defense Administration, with a valid interest in helping the air personnel for evacuation, didn't bother to support the program in view of Administrator's opposition and Congress' past refusal to allow money for civil defense purposes.

• Civil Administration Administration couldn't give "official" support to the Senate's funding legislation, but GAO Administrator Charles Hause "passively" signed off on it.

Other witnesses who strongly urged enactment included Joseph Coughlin, representing Aircraft Industries Association; Stuart Tipton, representing ATA; Maxwell Ballou, President, Airline Attorneys and Taxing Society; J. E. O'Flaherty, executive director, Airlines Personnel Relations Conference; Jim Coffield, vice president, National Aviation Trades Assn.; Edith Rostad, former Undersecretary of Commerce for Transportation, now was president of Case Stearns Co.; Lester Jilly, secretary, and Harold Voss, director, of the North Dakota Aerospace Commission. —KJ

Newark Field Gets Second Chance

Big eastern base open to traffic, but restrictions cause airlines to act cautiously in using field.

Port of New York Authority opened continuous Newark Airport on the airfield on a limited basis beginning June 16 after approximately a four-month shutdown, but for the first few days the only activity consisted of landing by private planes and house-hunting flights permitted by ground staff.

There was good reason to believe that Newark, formerly one of the world's busiest terminals, would not again become a major base in the East until opening of its new instrument runway, scheduled for early November.

Steadily increased operations were the major reason for surging speeds of the nearly nonstop schedules and considerably frequent flights. It also appeared that the carriers may have been caught with their pants down. ▶ **What Happened**—See-Tell managers of the airport, based on early reports at Newark believed that the recent rules made way too straight all large-scale operations at the field practical, but, they said, "we had to get the field physically open and operate even a few flights to give us a chance to get back in the good graces of the nearby residents. We'll see what happens now."

Proximate completion of the instrument runway, there was the rule established by PNTA as recommended by the National Air Transport Coordinating Committee:

• No takeoffs on Runway 34 beyond Elizabeth or on 25 toward Newark.

• No landing on Runway 6 (from the direction of Elizabeth).

• Operations permitted day and night, but only when ceiling and visibility minimums are 1,000 ft and three miles.

In addition CAA has had down the following runway priority system: Newark 1, Priority 1; Runway 10, Priority 2; Runway 6, Priority 3; Runway 24, Priority 4; Runway 15, Priority 5.

These priorities will be reversed when the new instrument Runway 42 opens, with preferences probably also altered.

• Takeoff Priority 1, to the north on Runway 10, Priority 2, to the north on Runway 24, Priority 3, to the north on Runway 15, Priority 4, to the west on Runway 16.

• Landing Priority 1, down the south on Runway 4, Priority 2, from the east on Runway 28, Priority 3, from the north on Runway 22, and Priority 4, from the west on Runway 10.

Although Runway 10 is open at present for landing from the direction

of Newark, an inspection rating indicates low safety standards.

With Runway 10 out for landing from the direction of Elizabeth or talents toward that city, Newark is left without an instrument runway until the new strip opens in November, thus the rating and certainly make things difficult when CAA has gone to record a runway it will shortly notice there is still one available.

► **May Ask Inspection**—Although a carrier's inspection reporting seems surrounding localities had written PNTA that it would seek an inspection should the Authority approve the airport's expansion, there was no action along these lines until last week.

An early check of the current instrument schedule indicated that the initial Newark schedules probably will not go above 50% of the maximum, or 100 more aircraft arriving hourly below the point of arrival, until the new instrument runway opens. For the most part they were busy studying weather records in an attempt to calculate what schedules they could forecast under the restrictions before calendar. Many, particularly the freight carriers, were not anxious to set up duplicate facilities in case they wouldn't use Newark when the weather killed operations.

Although once still believe Newark is the best field for conducting flight operations because of its closeness to the New York market, others were impressed with the new 51-million cargo facility set up by PNTA at Newark. Since many of the freighters at Newark remain there, it might be that this field could supplant Newark as an operations center. Some of the carriers operating out of Newark and they would like to get back to Newark.

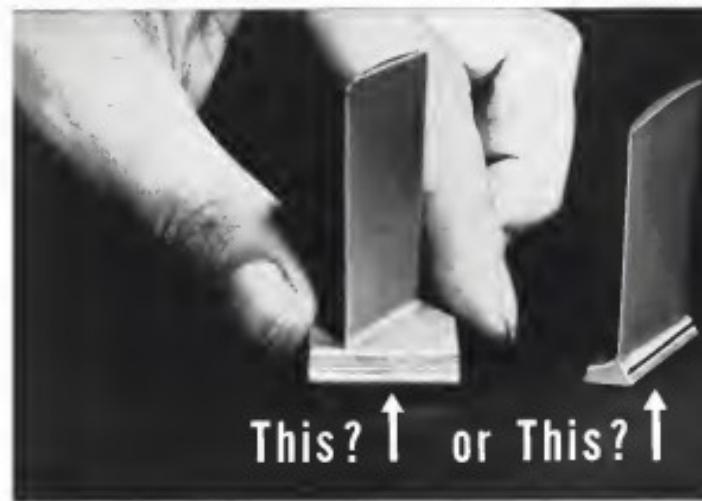
In the meantime, Port of New York Authority is working at its implementation pace to finish its own instrument runway. Basic site work has settled

Civil Domination Output Assured

Dorothy Melphon, Inc., Buffalo, Conn., now is in a position to take command of orders for counterparts of the YH-47C tiltrotor it is making for the Army.

The company's conventional schedule has been made part of CAA's C7 production program for civil aircraft, which means that Doroth can take delivery of necessary materials to make the seven-plane crop.

Which One Will Save a Million Dollars?



Three years in the making, the balanced jet engine compressor stator blade (left) promises to save the armed forces not just one million, but millions of dollars annually in jet engine costs, compared with the forged blade (right). The new G.E. design is well on manufacturing cost in half and saves over a third in critical materials. Military approval has been received for the use of balanced blades in the General Electric J47 GE-23 which powers the Boeing B-47 Strategic bomber. And G.E., through the United States Air Force, is sharing the process with other fighter aircraft.

The blades are rolled in long strips, contoured to the proper profile, and cut to desired length. Each blade is then welded into a separate base which fits the same

area as the "disk ring," used with forged blades. Thus the ring and an expensive manufacturing and assembly process have been eliminated.

Kerriance tests on two engines equipped with the balanced blades proved them just as efficient as forged blades. The base provides greater resistance to vibration due to uneven airflow through the compressor. Damage caused by foreign objects entering the compressor is minimized because the new blade is bonded much more strongly to the casing.

A product of G.E. research at the Thomas Laboratory in Lynn, Mass., this new method of manufacturing stator blades is another of the many ways in which G.E.'s constant pioneering contributes to the advancement of aviation. General Electric, Schenectady 5, N.Y.

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The De Havilland "Dove" has proven itself in the "top tier" in its class. It has gross air speed, economy (about 180 mi. per gallon) and load capacity of almost 1000 lbs., making it an ideal executive transportation vehicle. No other airplane can boast of so many fine features which add to the comfort, safety, ease of operation and overall performance both on the ground and in the air as the "Dove".

De Havilland Canada is a company engaged in the manufacture of the "Dove" and has had direct working experience with the aircraft since 1948. Therefore we can guarantee that the "Dove" will

deliver top performance air-mile, after air-mile, after air-mile.

A good supply of replacement parts and accessories are available, and expert maintenance service is available at Pontiac Municipal Airport, Pontiac, Michigan ... and all well equipped airports.

Factory-trained De Havilland service representatives are at a moment's notice.

De Havilland Canada is a wholly-owned subsidiary of Avro Canada Ltd., Toronto, Ontario, (just across the border, as the "Dove" flies) assure us ample supply of parts and equipment readily available.

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- Low maintenance cost
- Hydraulically self-feathering propellers
- Automatic boost control
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- 180 mph true airspeed speed, at 45% power
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AERONAUTICAL ENGINEERING



SUBSONIC TUNNEL at the Forrestal Center is investigating boundary-layer control on model adapted from a captured MiG-15.



COUPLED ROTOR system is tested in this wind facility providing instant of rates stability in vertical and horizontal axes.

Forrestal Center to Study Fundamentals

Research hub will delve intensively into studies of flow, aeronautical engineering and flight problems.

By David A. Anderson

Princeton, N. J.—Basic studies in flow sources and associated engineering top the program list at the James Forrestal Research Center of Princeton University, which was dedicated here recently.

The basic concept of the Center differs in one respect from the advanced

portion of flight problems in the over-all scientific scheme.

Program Report—The Center occupies 800 acres of land and the laboratory buildings which were former property of the Rockwell Institute for Medical Research in the 15 months since the first announcement of the center's establishment by the U.S. Office of Defense.

Within that limited outline lie four major efforts in aerodynamics and a broad area of interest, research, construction, in the fields of thermodynamics, fluid mechanics and combustion. The related effort goes toward these subjects underlining the current im-

Leadership demands constant achievement



U. S. MILITARY SERVICES
AND 9 OTHER NATIONS
CHOOSE THIS RELIABLE
JET TRAINER

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PILOTS
TRAIN IN
LOCKHEED
JETS

U. S. PILOTS here are introducing themselves to jet flight more frequently in skill than comes from repeated, thorough training.

In nearly every instance America's flying aces make their first jet flights and attain their skill in a Lockheed jet selected as the standard fighter-trainer by the U. S. Air Force, Navy and Marine Corps. Allied pilots, too, are taught in these jet transports from Hitler's Germany, Denmark, Norway, Belgium, Greece, Turkey, Portugal, Canada.

Lockheed developed that two-place jet trainer from America's first jet fighter, the battle tested Lockheed F-80 Shooting Star, proven for reliability in Korea.

America can be proud of the high standards of U. S. training, and Lockheed is proud of contributing the airplanes used to train the world's finest jet pilots.

LOCKHEED

SUPER CONSTELLATIONS
TO GET TURBO-PROPS

The U. S. Navy has selected the new R70-1 Super Constellation as ideally designed for vital conversion to turbo-prop power. Only minimum modifications are required, resulting to better No structural changes of the wingspan, fuselage or basic wing are necessary.

Significance to airline operators is that Super Constellations with Wright 2250 h.p. compound engines can later be converted to turbo-props. This conversion to Pratt & Whitney T-34 Turbo Wasp engines will put the Super Constellation in the 450-seat hour-class.

The Super Constellation offers any airline operator superior performance he desires, from high density coast travel, to heavy coast-to-coast travel, or it can be used for efficient, non-stop cargo purposes.

Never before has the basic structure of any aircraft provided so adequately for growth, ensuring the operator many years of competitive performance. Compared with any of today's certificated aircrafts the new Super Constellation is superior in versatility, speed, payload, range and ability to earn greater profits.

NEWS NOTES FROM LOCKHEED

Eight international airlines have now ordered Super Constellations: now recent Scandair & White Airlines and Danish Air & F. K. Air Transport. With these new orders, total Super Constellation commitments stand at 200. A new "White Horse" Standard of Lockheed F-94 AF Weather Jet Fighters is passing its trials at Langley, Va. The F-94 AF is the first aircraft to use the latest digital control system, featuring compensating ailerons, high-lift flaps, trim and roll-on power. For pilot comfort resulting from the unique combination of extreme expansion in 100 thermal resistors... The single Allison jet engine in the Lockheed T-33 jet trainer is now producing 3,000 hours of life, or 81.7 percent of World War II fighter pilot air time without having to fly the Lockheed T-33 trainers, and normally when the engine is run at 100 percent power, it can be maintained for 100 hours more, unassisted by ground crews. Major redesigns include a look outside.

FROM THE WORLD PRESS

Under the headline "New Plans for Jet Propulsion Center," Foreign Press Today says: "The Lockheed F-80 Shooting Star still is considered to be the best ground attack jet in Korea. There is no question about the fact that the F-80 is capable along the present lines of the F-80 is the answer to the inter-service close support requirement." When another Look back design was chosen to prove its basic design, the F-80 was selected. The original type has replaced it in Lockheed's production line.

research project by the Research Center
• Isolation of research activities

• Exploration of the Center's potential
for the advancement of science

First organizational task completed
in the flow control and mechanics
department—our first project just was a
scale model for the test, but has since
been converted into an equally useful
lab tool and one is hypothetical. Their
chief advantage is the high test-section
pressure available, which means that
the range of test Reynolds numbers
can be very large. The tunnels are all
blowdown types and blowdown goes to
atmospheric pressure. Storage air at
1,300 psi is pre-compressed, tanked

• In the competing area, overseas
jet, jet propulsion and chemistry pro-
jects are the scientific highlight,
with electrical engineering soon to
be added.

• Aerodynamic Requirements—Although
Princeton slightly narrows the distinction
between science and engineering in de-
scribing its programs, certain phases
of both make up the Department of
Aeronautical Engineering headed by
Professor Constantine Polites. Perhaps
the best way to describe the aerodynamics
program is to separate primary objectives
and consider the whole field of
aerodynamics.

There are four major research areas
in the Princeton Center's aerodynamics
effort:

- **Supersonic flow**, primarily in the
phenomena of Reynolds number effects
and shockwave and boundary-layer
interaction.
- **Jet propulsion**, with effort divided
between the ducted rocket and rocket
motor stability.
- **Flight research**, for boundary-layer
control and stabilization systems.
- **Hypersonic**, particularly control and
stability studies with consideration
of shock waves, model tests and full-scale
flight tests.

Currently this work is located at both
the Princeton campus and the Forestal
Center, while research should be the
center program moved to the Research
Center.

Much of the work in jet propulsion
is sponsored directly or indirectly by
the Naval and Photo-Graphical
Jet Propulsion Center. The facilities
of the Guggenheim Center, and administration
of the jet propulsion program
is one of the functions of the latter
body.

• **Supersonic Flow**—The main field of
affair is supersonic stratospheric en-
tiers around the changes in flow pattern
with Reynolds number. These flow
changes caused by variation in such
and variables which are automatically
controlled in the Reynolds number
parameters have been considered to
be the largest single remaining obstacle

in the way of understanding supersonic
flow.

The attack on this problem has been
two-pronged by theoretical studies and
supporting tests in the Center's wind
tunnels. The basic idea is to make
the flow more uniform. We are trying
to do this by using a scale model for the test, but has since
been converted into an equally useful
lab tool and one is hypothetical. Their
chief advantage is the high test-section
pressure available, which means that
the range of test Reynolds numbers
can be very large. The tunnels are all
blowdown types and blowdown goes to
atmospheric pressure. Storage air at
1,300 psi is pre-compressed, tanked

• **Tunnel of the Trade-Type**—The
Princeton Center has approached many of its problems
in the construction of the apparent
end of the large supersonic windtunnel. Manufacture of large size steel tubing
on the order of twelve-foot diameter
just couldn't deliver tubing that would
take the high pressure air from the cen-
tral tanks.

One of the Princeton efforts, search-
ing his mind for ideas for high strength
tubing, thought of leg-brace nail
steel. After a bit of experimenting,
the Novel Gas Fabricator came through
with a section of the kind of a 16 in.
tube which was large enough—and more
than strong enough—for the supersonic
windtunnel.

Another simple solution to a gas-
tension problem came from the high
level of the operation of the tunnels.
Various kinds of air protection have
been developed at the many windtunnel
and combustion facilities throughout
the country. But the Princeton group
found its best solution in the modification
of standard New York radio tubes.

Normally these sets have a shielded
coil situated in front of them, in this were
added additional short lead rubber
padding and a loop ring which fits
against the user's head and encloses
the eye. These house-made ray attenuate
the noise from the tunnel to be
less than half level.

An interesting development is the
group's use of what we used to call
the "useful" for windtunnel models.
Now it is called "useless" because it
is more likely to be the shedding
airfoils than either wind or heat, which
make sharper models. Nylon has
lower heat capacity than metal doesn't
heat up so rapidly during tests, and
therefore takes less time to cool, reducing
the time between tests.

• **Propulsion Studies**—The Forestal
Center is headquarters for Project
Spartan, a universal basic fundamental
program in high-pressure combustion
Admittance. Administration and coordination
of the research efforts of 16 universities

SEPARATE TRAINING FOR INSTRUCTORS AND

In developing the new Lockheed jet engine. For information about Lockheed's unique jet training program, write to Engineering Dept., Lockheed Aircraft Corp., Burbank, Calif.

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UTICA HELPS



The name UTICA, famous for quality forged tools for more than 30 years, now signifies a learned master of turbine and compressor blades to the aircraft engine industry.

BY MAKING TODAY'S METHODS "OLD FASHIONED"

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In the forging of turbine and compressor blades Utica is using the most modern methods, the finest equipment and the skill born of long experience in forging.

But, the constant search for improvements goes on.

Our engineers and metallurgists work and plan continually to make today's methods obsolete.

So, whether you come into contact with Utica tomorrow or several years from now, you'll find leadership that reflects this constant hunger for progress. Utica seeks to help itself by working most for advancement.



UTICA DROP FORGE & TOOL CORPORATION, Utica 4, New York

MAKERS OF THE FAMOUS UTICA LINE OF DROP FORGED PLIERS AND ADJUSTABLE WRENCHES

Information is contained here.

Preston's contribution to Project Sagittarius will take the form of two studies. The first is concerned with solutions between difficulties and opportunities in launching the rocket. The second deals with mixing of solid fuels—nitrogen and supercalor—such as are found in rockets or the doped rocket.

The doped rocket is a powerhouse of great power for certain classes of interplanetary assaults. It is a combination of the single and rocket motors in which the rocket is placed inside the canister. The rocket functions as an ejection for the low-speed stage of operation and also serves as a flame holder for the high-speed stage. The rocket motor typically burns off about 25% of the rocket's external mass.

New test facilities for rocket motor studies have recently been completed and are about to be equipped and instrumented. Rocket motor flights will take place in two test houses which share a common control room between them. All instrumentation is remote and is recorded in a building located nearby.

Flight Research—Eighty acres of pasture land had been converted to a flight strip adjacent to the Research Center. There are currently two Novavair-type North American and one French-designed and one English-designed aircraft.

The completion of a four-engine Breguet—now about half done—will permit the Center to house a larger number of aircraft types. In the offing are a Transoceanic Boeing and a helicopter which with the two Novavair, will represent a versatile and unusual fleet of test planes.

When the Center's boundary-layer control program has completed its theory and wind-tunnel test phases, flight test work will be done at the instigation of the Center's aeronautics director.

Aerospace control and the final use of the flight program—the training of Air Force engineering test pilots—is in cooperation with the Air Force Institute of Technology. The service personnel have the chance to combine the theory and practice of test flying; in addition, they get intensive specialized training in the classroom.

Rotary-Wing Control—Aeroflex planned for the flight research facility will be followed up on helicopter. The Center's program will involve the development of theory and model studies and the only remaining step is flight tests of the large craft. With these three phases of the program completed, the Center will have valuable information for correlating three basic attack on helicopter problems.

The model approach for helicopter is a different approach than used by most researchers on the subject. Instead of a complex dynamically un-

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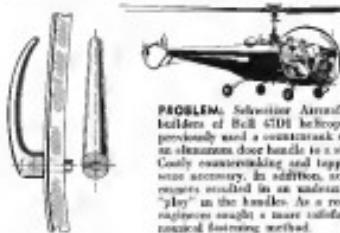
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Fastener Problem of the Month

Helicopter Door Handles

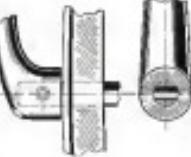
June 1952



PROBLEM: Schweizer Aircraft Corporation, builders of Bell 47H helicopter doorframes, previously used a camlock track device to attach an elongated door handle to a scroll latch shaft. costly counterboring and tapping operations were necessary. In addition, accumulated tolerances resulted in an undesirable degree of "play" in the handles. As a result, Schweizer engineers sought a more satisfactory and economical fastening method.

SOLUTION: Self-locking ESMA.

Balpine proved to be the fastener that Schweizer required. Balpine are press-fit, slotted tubular steel pins with chamfered ends. Installation is quick and easy—they are simply driven into holes drilled to normal production tolerances. No extra operations are required. Balpine hold fast—vibration-proof—because of the constant tension they exert against the hole walls. They are readily removable when necessary—and reusable. Schweizer reports that the use of Balpine on this application has cut assembly costs, and provided a more secure attachment, with handle "play" eliminated.



ROLLPINS are proving themselves as the most practical and economical fastener for a tremendous variety of applications. Mail our coupon for the design information you will need to solve your next fastening problem.

ROLLPINS
a wide variety of lengths and diameters



Dept. RT-6, Kalamazoo Sheet Metal Company of America
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Please send me the following information on ESMA self-locking fasteners:
—Balpine Balpins and handles (Name is a drawing of our product)
—All ESMA accessories (Name is a drawing of our product recommended)

Name _____ Title _____
Firm _____
Street _____
City _____ State _____ Zip _____

In model, the Gouva's helicopter group is trying to look short the rotor system.

For that they have built a rotor head with the features of the Bell design—no ratios, stabilizing bias—to about 2.5:1. The head is supported by an electro-hydraulic motor, mounted in a yoke which is supported on a cohesive and housed structure. The whole works in free to roll along a pair of accurately aligned rails. There there is restraint in the vertical axis and no use horizontal direction.

Control and instrumentation equipment is in a glass-enclosed booth which faces the track.

►Other Projects—There are other basic programs, not under the supervision of the department of armament engineering, which will contribute to the great advancement of the national security.

In particular, for example, Piasecki and the Naval Ordnance Test Station are developing an attack on the behavior of vehicles under extreme stress, regardless of the phenomenon causing that stress. The completion of this program is yet another development locus lage and significant.

Applied mathematical research and the computation center will possibly provide some of the answers in the complete analysis of flow problems. Control and navigation fields where the Naval Ordnance Test Station make signal contributions to the field of aircraft navigation and flight.

At least one of the staff working in the development of nuclear science—Prof. Lasson Spitzer who presented a superb paper on interplanetary travel between celestial bodies—has considered the application of nuclear energy to jet propulsion, specifically to the rocket motor.

►Defense Projects—Bulk of the work at the Naval Ordnance Test Station is high-priority projects designed by various government agencies. During the coming year which starts this fall, the Naval Ordnance will probably perform work on more than \$1-million worth of such projects.

Although these studies are geared to the present national emergency, the Naval Ordnance has reduced its fields of endeavor so that the results could continue to give value to industry and knowledge as peace. It is the Center has the backing of the sponsoring agencies—the Air Research and Development Command, Navy Bureau of Navigation, Office of Naval Research and Atomic Energy Commission.

These agencies and the staff have accepted the broad concept of the Joint Research Foundation Center to advance the basic sciences and to apply these advances to the interests of engineering.

On the Piasecki "HUP"

Attached to aircraft carriers, Piasecki helicopters never monkey with liftoffs and landings, ready to receive combat pilots forced into the sea.



IT'S WICKWIRE AIRCRAFT CONTROL CABLE

In an era of supersonic jet speeds, the relatively slow-moving but ever-ready helicopter has captured the imagination with its unusual reactions and evasion of calamities in Korea.

Paving up the rapid advances being made in design and utility of multi-winged aircraft is the new tandem-rotored Piasecki helicopter. On the Piasecki "HUP," as on so many other types of planes, reliable Wickwire Aircraft Control

Cable has been selected for all-important controls.

Whatever your particular needs may be, we can supply you with Wickwire Aircraft Control Cable in the right size and construction for planes of all types and sizes. For your greater convenience, Air Associates, Inc., maintains full stocks of Wickwire Aircraft Control Cable in their own and CSIM warehouses. See list of cities below.



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AIRPHIBIAN amphibious component transmits current motion to engine gearbox through direct and parallel arms to make rods in place effectively.



H-13D ROTOR HUB shows shafted Bell design of nose blades and stabilizing bar on U.S. Army's country reconnaissance copter.



TAIL ROTOR of the Bell H-13D is made of tubing and panels. Drive shaft is simply supported above rearward of rear fuselage, accessibility for ease of maintenance is outstanding. Note slot for preventing anti-torque rotor in event of tail striking ground.



DIVE BRAKES on Douglas F3D 2 Skyray are open and held by long travel hydraulic cylinder, located on fuselage just behind tail, then broken free to drag control during approach as well as down. Note how wings curve away for identification when brakes are opened.

Things You May Have Missed at SAE Show

About a score of American's military and civil planes and copies were lined up for cleanup inspection at New York International Airport (Idlewild) during the recent air display sponsored by the Society of Automotive Engineers at its National Aerostatic Meeting.

Cleanup is the right word—everywhere there were people bent over to look at the underbelly of a fighter, squatting under the wheel well, standing on tiptoe to peer into a jet tailpipe.

But often in displays of this type, visitors come away

with the feeling that they haven't seen the trim for the forest.

These photos taken for AVIATION WEEK point up some of the features that may have been missed. The more unusual way that Fokker transmits control forces from the automobile half to the airplane half of his Amphibian; the use of tubing and surfaces at the tail of Bell's functional copter, the H-13D, the new look in external perhaps flying under the wing of the big Douglas Sky Knight, using other—DAA.



POWERPLANT of Agusta spinnaker is Continental E-215 mounted for low weight for possible future application with larger engine. Triple exhaust stacks are unusual feature on T-33A/ATM monoplane.



SIKORSKY YH-18 a test of most recent Army Field Forces acquisition. Some details are characteristic of flying blade rotor but appears to have been simplified over earlier Skyray model.



NEW PACKAGE for armored crews is the elongated "bowtie" shape sleep deck under the starboard wing of the Douglas F3D 2 Skyray. Douglas developed the layout in order to carry fuel in reservoir externally on jet fighters without a large penalty of increased drag.

**Insulation
for a Scorpion!**

REFRASIL
is on the job here...

Photos of these four aircrafts of the USAF Air Materiel Service Bureau's F-100 Super Sabre, the newest addition to the inventory, are presented by the power plant. Blockouts on each engine F-100's are unique because they are light enough for easy removable as well as light enough for maximum efficiency. In a like manner of the two Bell's, a single stage fan of approximately 5000 rpm is used. These are one reason why Bell's is placing the fan in the front of the engine. Blockouts are open for the use of aircraft maintenance.

Refined insulation fibres insulate aircraft interiors, fuel tanks, engine compartments and various aircraft components. Insulation blockouts are available in standard sizes.

Refined insulation fibres have been installed in the aircraft interiors of the F-100, the F-105, the F-104 and the F-105.



REFRASIL
Refinement in insulation for aircraft interiors, fuel tanks, engine compartments and aircraft components. Insulation blockouts are available in standard sizes.

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Valve Talk

by WM. R. WHITTAKER CO., Ltd.

By Alvin Mills,
Senior Member, Aviation Writers Assn.

As he talked, the lean, grey-haired Seat sketched valve mechanisms on a scratch pad. It was unconscious doodling, typical of Don McLeese's absorption with the challenges of engineering design.

Executive vice-president of the Wm. R. Whittaker Co., Ltd., and a private pilot when he has the time, Don directs the worldwide operations of the Southern California valve concern, with quiet assurance and original thinking.

"We are in a fast-moving business of new developments, and we have to move faster than others," says Mr. and Mrs. "It's a day-to-day fight to stay ahead of changing airlines and power plant designs."

Thus, the son of a farmhand now runs one of the world's largest manufacturers of valves and hydraulic machinery. He started at 16, when he took over his brother's motor during World War I. An engineering major, he says, loves, sings, and enjoys engineering. Don prefers what he likes best—research, most efficient use of his knowledge.

Don's ingenuity—research and creation—has played a large part in moving the Whittaker Company into a \$16,000,000 backlog base over the last decade with both British and American organizations. It was his design of a valve system for the original Whittaker (CB20) valve that replaced the old-type solenoid and microswitches used off valves.

Don Whittaker and McLanahan emphasize the importance of changing valves and valve-makers as integrated units. From this realization spring their affiliations with the company. Whittaker's entry into the valve market has been developed by a team of many of the world's leading valve makers, and the result is a complete gate valve series that completely changed military thinking as it related to heat shield equipment.

"Today we have three very special areas at Whittaker," Don explains. "We produce the standard valves ourselves. We also have our own research and development facilities, and our specially designed valves, and work on designs for the future."

Standard valves are produced by taking the crud out of steel. New valves bring tough problems of modifications and modified therapies. For the component designs are the real head-aches.

"We must follow all posture de-



Design for a jet transport.

Canada Lab Analyzes Jet Transports

An aerodynamics laboratory of Canada's National Research Establishment has come up with an interesting study of jet transports.

Results of an investigation recently conducted at the laboratory show an optimum design configuration for a transatlantic transport of 390,000 cubic feet with four turbojets each delivering 6,500 lb. in level state flight. And curiously enough the design layout resembles the de Havilland Comet.

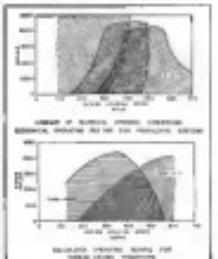
► **No Optimum**—No single horsepower will emerge as the answer to every thing, says the NAE study. And to boil this up a graph of range is plotted against speed and marked with areas of economical operation for piston engines, turboprops, and turbojets. These three regions overlap to a large degree, indicating the need of programmed transport which can change its engine type as it flies.

NAE made no simplification of both types of gas turbine powerplants; it concluded that 400 mph is about the top cruising speed for the turbojet.

By the time one program module provides the new designs are in the drawing boards, wider development of test facilities will start and theory being evaluated. We never catch up with ourselves."

Avalanche safety, Don says, are other growing needs. In addition to his 16 design engineers (now 23 persons of Whittaker's business) and particularly mobile valves are adding a multitude of oddities in metallurgy and tribology.

"It's an engineer's day," he told *AVIATION WEEK*. "We have to take care of it. One out of every two or three people in an engineer—and these 150 men deserve plenty of credit."



*Instant Acting
hydraulic clamp
eliminates die
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Co. Ltd., Galt, Ontario

HEAVY DUTY that lasts hours of use! Frequently, top pressure plates on forming dies are held in place. Nuts must be loosened and re-tightened each time the work is shifted or removed from the die. A full day's operation means a sizable time loss just tightening and loosening nuts.

Top clamping cylinder on the Hufford Bulldozer dispenses with this waste. The cylinders act instantly, raising the top die plate in place and overcoming deflection. Release, and the top plate is free for top workshop action! The entire costliest unit may be removed for conventional bulldozing.

AUTOMATIC FEEDER moves automatically by fully automatic feeding arms at any pre-set position. Settings may be rapidly approximated with the motor driven feed screw type shaper and *Weld* micrometer settings are by graduated hand-wheel.

RATE POSITION INDICATOR continuously shows main position to 150° from any desired starting position.

NORTH AMERICAN F-86
Sabre Jet fighter uses Timken bearings on main and main landing wheels for protection against all loads.



HOW TO HELP A FIGHTER ROLL WITH THE PUNCH

WHEN the Air Force's famous fighter—the North American Sabre Jet—lands, the landing gear wheels take an awful wallop. But high speed and hard impact don't faze this ship. The main wheels roll with the punch on Timken® tapered roller bearings. And Timken bearings are also used in the nose wheel.

Low contact between rollers and races gives Timken bearings extra

load-carrying capacity. Tapered construction lets them carry both radial and thrust loads in any combination.

Tire rolling motion and incredibly smooth surface finish practically eliminate friction. Their special analysis Timken steel is case hardened for exceptional resistance to shock loads and wear.

Wear and maintenance costs are cut, life extended. Under normal

conditions they will last the life of the wheels.

No other bearing can offer all the advantages of Timken bearings. Be sure to specify them when you buy. Look for the trade mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canada plant: St. Thomas. Our Cable address: "TIMRDCO".

 This model is a fighter using Timken bearings.



GREATER LOAD AREA
Because the load is carried on the tips of conical rollers, Timken tapered roller bearings can support greater loads, hold smaller clearance areas, and withstand higher temperatures than standard tapered roller bearings.



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NOT JUST A BALL... NOT JUST A ROLLER... THE TIMKEN AVIATION BEARING

BEARING TURNS BIGGER... BIGGER

...BETTER... BETTER

...LIGHTER... LIGHTER

...EASIER ON ONE SIDE

weight. And it adds that at speeds above 300 mph, the fighter jet is a serious range competitor.

NAF agents in favor of simplicity, and says that choosing a competitor between weight savings and drag damage is still worth the effort.

As a final step NAF evaluates the competitor's option jet transport configuration for the aircraft's cruising speed of 550 mph. Weight of the craft would be 35 ft. in length, wing span of 36 ft., wing aspect ratio 6.5. Gross weight for aircraft would be 138,000 lb. The plane would cruise at an altitude of 37,000 ft. and have a maximum range of 2,400 mi.

Boeing Saves With Quality Control

Boeing Airplane Co. has been able to reduce much of its inspection work by a new method of systematic analysis developed after several years of research.

The new method calls for a higher degree of quality control during production, thus requiring less inspection of the finished product.

For example, parts produced in the machine shop previously were delivered to inspectors who checked any part not complying with the standard. If something was wrong in the machine shop, the inspector had to go back and inspect many machined parts.

Under new procedures, an inspector works in the machine shop itself and checks a sampling of the parts produced by each of 15 machines every hour. If the cutting tool or a machine starts to wear, the inspector discovers it almost at once and notifies the department foreman. The tool then is sharpened or replaced before any parts are operated.

The inspector also keeps a chart for each machine. The chart shows the allowable variation in size, number of parts produced, time and performance of each machine. By studying the chart, the supervisor knows how often a new cutting tool should be put in the machine.

Inspectors by sampling instead of by checking each part save a great deal of time and has proved so efficient, says Elwood Kutter, Boeing quality control manager. Out of 50 radio-support bolts produced by one machine in an hour, the inspector checks only five at random.

In the heat-treat department, the supervisor no longer checks each batch of heat-treated parts but instead samples from each batch every 24 hours. In the meantime he has kept a chart of the entire process—temperature and chemical content of the heat treat solution, time of treatment, etc. By watching the inspector's chart, the men in the heat-treat department are

able to control their operations with a high degree of efficiency. This greatly reduces the possibility of bad parts.

The method of inspection by sampling also has been applied successfully to strength inspection. Charts and tables have been developed on which these two parts in a specific washer must be checked to give an accurate report of the quality of the whole lot. This type of inspection is used only in cases where faulty units will be discovered in assembly, however. Critical items which go into a place still undergo parts-by-inspection.

The charts made by receiving inspection because a part of quality control

by showing which subassemblies turn out the best work, and therefore should be preferred.

Under the new program, the quality control department's work consists of about 40% inspection, measurement and sampling, and 60% of the 100% quality control (checkout) of production to prevent rejected parts.

RFC Machinery Loan

Transamerica Aircraft, Inc., Nashville, has received an RFC loan for \$30,000 to buy new machinery and supply verifying equipment. The aircraft parts firm says it will



SABRE JET'S EDGE CUTS DEEPER

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301 ANGELES INTERNATIONAL AIRPORT, LOS ANGELES, CALIFORNIA



ON THE STEP Martin M-270 research craft soars over the water of Chesapeake Bay. This is being used for development of high-length-hull ratio hull, was modified from original experimental XPSM-8.



ON THE GROUND new hull form of Martin M-270 gives sleeker look to original stable form of XPSM, maintains hull drag, reduces variations of forebody and base and effectively changes

M-270 Hull Reduces Flying Boat Drag



UNCONVENTIONAL outline for a flying boat is shown in this view of the Martin M-270.

Next step for sleeker flying boat hulls is length-hull ratios of 15-to-1 being explored by the Glenn L. Martin Co.'s M-270 research aircraft.

Now in flight and low tests in the Chesapeake Bay area are Martin's plan, the M-270 is the full-scale airfoil model of research and wind-tunnel models of the past several years.

Design of the new airfoils on the M-270 was the responsibility of Martin's hydrodynamic group under J. D. Person, working closely with engineers at Navy Bureau of Aeronautics, National Advisory Committee for Aeronautics and Stevens Institute of Technology.

* * * Higher Ratio*-The principal reason for the increased length-hull ratio on a flying boat hull is to cut down the wave-making drag.

Hydrodynamic efficiency is little affected by the comparative dimensions of length and beam of a hull. But as the length-beam ratio increases, all three hull drag parameters—wave-making, wetted surface area and wetted area-

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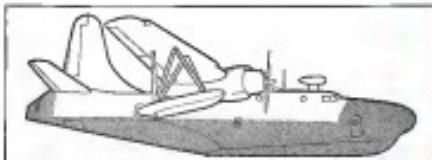


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NEW PARTS built into Martin XPM-1 are shown in this shaded drawing of M-279. The tail has been added to nose and to lead off of midship fuselage.



TWIN TAIL MODEL of the M-279 half comes through the tank at Stevens Institute of Technology. Black lines on model have been reproduced as full-scale engine in white, serve to correlate qualitatively test data of each.

decision. That is why high ratios of length to span are desired.

Half weight figures in here, too. The greatest problem in designing a short, fat hull are considerably different from those in designing a long, thin body.

Studies have been made which seek an optimum while at the same time ratio, consider all factors of aerodynamics, structure, weight and hydrodynamics. NASA says that the 15 to 1 ratio is the optimum for flying boat hulls.

► Conversion-Tank tests on the Stevens flying tank followed the studies of new hull shapes. The final step was construction of model studies to the full-scale M-279.

The M-279 is mostly the first experimental XPM-1 flying boat (much like Bob's Parallel Project), which at another a Grumman (AE-2) Wisconsin AVIATION Week Apr. 21, 1972, p. 46); only the underbody and the four mid-fuselage fit entitled us now

Conversion of the X-10 was expedited for reasons of economy and time. Wing, engine and equipment were already proven components. Cost of getting the M-279 into service was then \$1 million, a relatively low figure for today's standards.

► Motivation? There's an enormous backlog behind the parts which were adopted for the M-279. "They're in there second incarnation," It says panel like this.

The wing and hull cross-sections were taken from the experimental XPM-1. But when the XPM-1 first came out of the Martin shop, she was a composite of new and old parts. The same wing and nose section had been part of an earlier Martin FBM Marlin, with some beef up in the wing structure to handle the new Wright R-1750 engine which replaced the PRW R-1300 engine of the Marlin.

When Martin went into production

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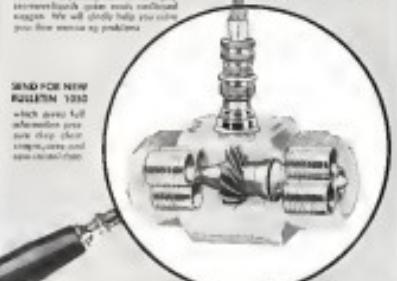
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on the PSM Merlin series, the need for the experimental "dog" ship could and is being available for the full development program.

► **New York's Child-Preliminary tests** had been completed and engineering design started at the beginning of 1951. By the time Merlin had arrived, the XP7M was back in the Martin shops having her body resurfaced.

Preliminary consideration in the situation was that the outside skin be smooth, thin weight and internal contour was adapted to a secondary status. New hull frames were built and attached to the change of the old ones with single lagged and riveted joints.

The nose of the X-Martin was cut so that it could be rounded over the additional six feet of fuselage length and the fuselage was also prepared and fitted to a simple extension of the hull below the line of the centerline.

The lower and line about the loads on the nose section were so that the forward cross section had to be strengthened a little.

Another hatchway, well above the waterline of the XP7M, had to be abandoned because they would have been below the waterline on the M-270 hull. No changes were required in wing, tail or tip floats, only minor alterations of pulley blocks were required because of local structure changes.

Fuel tanks in the hull were removed because the M-270 will not be required to fly long distances. Only for wing fuel cells were changes made.

► **The Technique:** The network of white lines on the hull of the M-270 corresponds to the same network on hull models used in towing tests. These correlations between model and full scale will be possible.

Martin plans two techniques for evaluating the new hull. The M-270 will be passed by a motor launch in one of these techniques for photography of the spray pattern. In the second, the M-270 will make passes of a stationary boat for the same purpose.

No preference of the new research boat has been released yet, but Martin does say that the new hull is showing better water stability and takeoff characteristics than the PSM boats. Martin engineers expect that the increased length and changed shape of the nose will greatly reduce the small amount of spray which new ships produce after the turn of the Merlin.

Gross weight of the M-270 is 64,000 lbs. In overload condition this figure is 77,000 lbs. The test will be carried out at weights ranging as high as 55,000 lbs.

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THRUST & DRAG

Friend of mine heard on recently in a group meeting on landing drag as a factor which had produced conflicts for long range aircraft. Every state of the engine was somewhere between preliminary design and production drawings.

One of the friend's designers didn't produce for weeks, and a visit to his house found only the left last and clearance dimension in place-as details. When asked how come, the designer hedged a lot and then said what he should do. My friend suggested that maybe he ought to take a sabbatical through the bushes here and there and check the sealed mission properties. Sure the loads that were applied. "What's a sabbatical?" inquired the designer.

"Well, my friend handled that one and then the truth came out. The designer just something to that effect. "Used to be a switch analyst—down up cases of market trends and that sort of thing. One day I heard that we're going to sweep an air craft so I came up. Previous guy says, 'What did you do on your previous job?' and I said, 'Drive cars,' and—" "Wait," said the personnel guy, "You're a designer." So here am I designer, and I don't know what the hell a sabbatical or a bushland or a designer. They're paying me \$14 per week plus my costume, and I'm miserable. There, two would have been the most terrible in my whole life and I'm getting."

He did quit the next day. And my friend wonders who'll be the engineer.

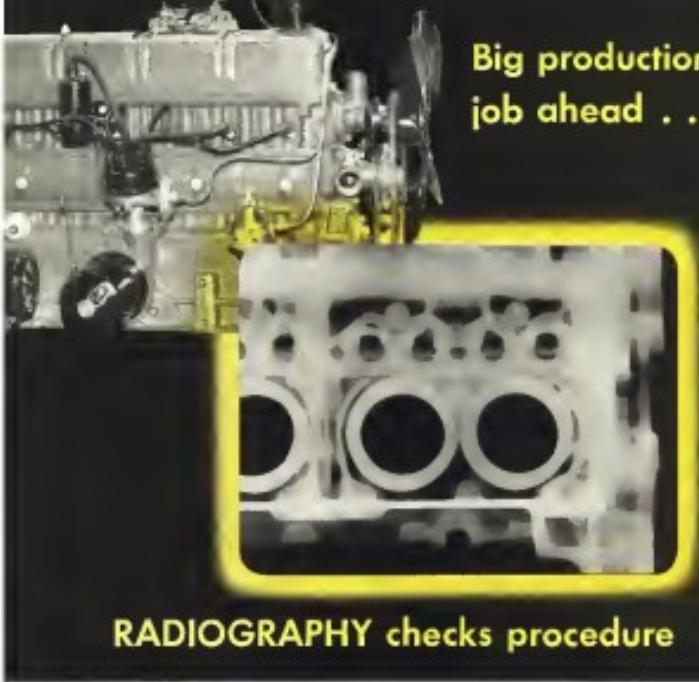
* * *

T. G. M. Segrest, chairman of the Hawker Siddeley Group, was one of the great masters of the aviation industry. He died at a young age, but he brought to his team and airline fighters of World War I, and he highlights his comments. Listen to this plan for new thinking:

"I know from my experience that there comes a time when, for any number of considerations, political or practical, there it is a tendency to hold back, to be cautious, to take a conservative line in design and development. We who are bent to revision should never relax our aim attitude. New plans, new prototypes are constantly appearing, still newer projects are on the drawing board. The prove all brought with it some undesirable qualities that we must learn to live with. Let us be bold then with the development of our machines and of our aircraft. If a plane is radical let us give it a full chance to prove itself and don't let us impede with programs."

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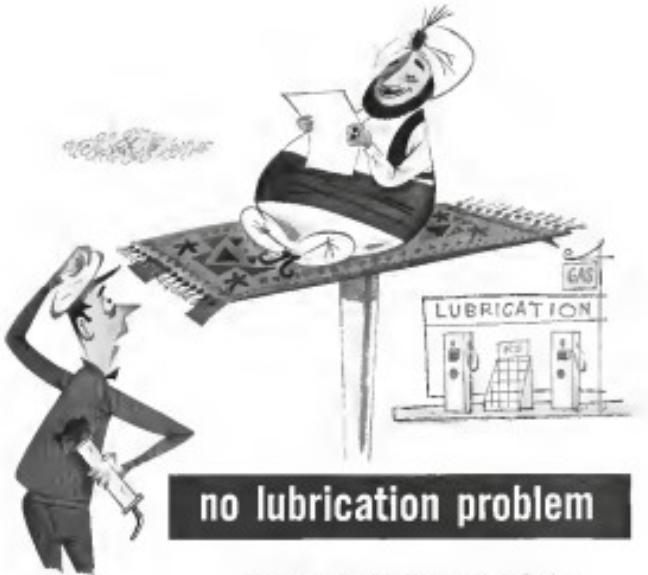
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PRODUCTION

Toothless Blade Has Quite a Bite

Solar has put his strapping box been put to work for an efficient cutting job at Solar Aircraft Co.'s San Diego plant. The "toothless" material is being used instead of conventional toothed blades or band saws for cutting standards.

Recently, Lever blade costs, greater speeds and a contribution to the strategic stockpile conservation program.

Solar's methods analyst, Jack Prusse, came up with the idea of using the box strapping when he was trying to figure some way of conserving on the seven thousand dollars a month Solar spends on new blades for cutting standards steel.

Experiment Works—He decided to try a toothless blade, and save the only material needed for the project was a box strap. After a few experiments, he had a length welded into an end-on section for adaptation to a band saw machine. The test indicated longer blade life and better results flow with a standard saw.

So far experiments show that the box strappping will work on stainless steel, but doesn't seem adaptable to non-ferrous materials.

Already, two machines are operating with the box strap toothless blade. And about one-third of Solar's men are being fitted for the same scheme of cost reduction.

Big Savings—Box strap blades cost 20¢ for a standard 36-in. band saw. The conventional blade costs \$1.00. Box strap blades will run about 29¢ to 30¢ below breakage line at \$2.50/L and Premier's ultimate for 100 hr. By comparison, the standard blade sets only about \$2 hr., thus reported.

Prusse adds he has experimented with .032 in. toothless strappling steel. This type of blade has an approximately 714 in. and an average 3 in. width. It has a weight per foot of 1.00 lb. The strappling steel costs 70¢ for a 100-ft. band saw blade as against 30¢ for the industry 013-in. box strap blade (\$1.00). Solar would prefer a .032 in. strappling belt over the \$35 breakdown it available now.

Widely Used—Solar employs the strapping in 11-in. widths and has it shaved into three bands—6 in. wide and another 1 in. wide. This is the ordinary material used here for strappping use. Thus, says it is quite pain-free to use for new blades the strappping that has been wasted from standards.

The box strappping has another advantage in the self-cutting action it



BOX STRAPPING can substitute steel as well as save time, cost, and wear gear savings. Solar Aircraft finds.

uses itself to form it into a loop. Tests are reported to have shown that the material will bend 300 times without breaking at the weld, compared to 10 times for an ordinary flattened band saw blade.

Speed Used—In order to illustrate that the box strap blade must have a speed of at least 3,000 surface feet per minute to operate effectively on a band saw, with maximum efficiency, the blade at 7,500 fpm. The strip speed, Premier believes, would be between 13 1/4,000 fpm. But that figures have not shown that the increase in efficiency would be sufficient to warrant a motor change to the higher speed.

Prusse and L. M. Klemmer, Solar works manager, agree that the box strap blades will out-striking steel when applied to strap-gage with performance comparable to a standard blade. The strappling steel does not go through the blade as often and hence automatically cuts out blades, like sand and cobalt steel do not, but as a production item has been used so far only on sheet stock.

Prusse reports that the blade is "not any worse than a new metal nothing, in the lighter side."

Black Action—The theory reported by band sawing of high speed steel is that the bottom of the box blade spike holds the metal being cut to the writing point and turns it way through conventional saw blades. It is well known that when equipped with teeth facing to the flames, the teeth act in such a way to bind oxygen in the metal being cut to speed the burning action.

Solar has discovered that the toothless blades lastened and strengthened while the fast few seconds of heat to a degree where they stop again as well as better than blades equipped with teeth.

Solar feels, too, that the same company can buy more blades from another source if they look closely at places where teeth have been cut off where there is a cutout.

Safe—One—the safety factor is an other important consideration. It's reported that when the box strap blade breaks, it doesn't stop at once an exploding saw blade.

If the operator comes in contact with the ordinary saw blade, his blade to lose a finger or a hand. Prism has produced a glazed box strap blade for stamping operations at 7,500 fpm. It's as long as two seconds—cut only a single pass on the glove. A longer period would burn his hand, he thinks, but his hand wouldn't be dragged into the machine as it might with a toothed blade.

USAF CONTRACTS

Following is a list of recent USAF contracts announced by Air Materiel Command:

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Air Armament Inc., 251077919, M. J. C. Contract 3210-101.

Airframe Products Inc., Los Angeles, reported 8 March contract 441-119.

Airbus Industries Inc., Chicago, and came a letter 877-101.

Airbus Industries Inc., Chicago, and came a letter 877-101.

American Aerospace Test Center Inc., Cleveland, reported 3210-101.

American Flyer Co., Indianapolis, Indiana, reported 3210-101.

American Wheelbarrow Co., Northfield, Ill. 3210-101.

Ames Research Center, Moffett Field, Calif., reported 3210-101.

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Central Aviation & Film Corp., Hicksville, N.Y., reported 3210-101.

Chrysler Motor Co., 30-101, 3210-101, reported 3210-101.

Consolidated Vultee Aircraft Corp., 70-101, 3210-101.

Detroit Diesel Soc., 3210-101, 3210-101, reported 3210-101.

Dynetics Inc., Huntsville, Ala., reported 3210-101.

Fairchild Camera & Photo Corp., 3210-101.



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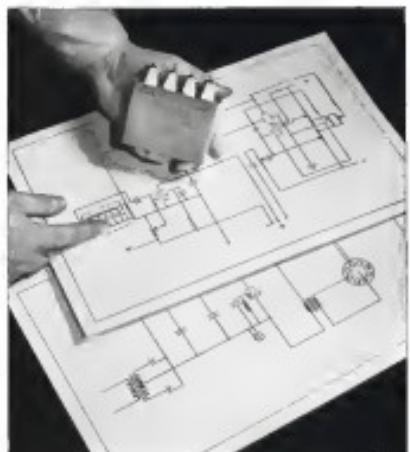
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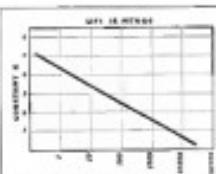
Zekler Corp., 901 Park Ave., New York,
N.Y., 10033; Zekler, E&I 100;

Zimmermann, Inc., Chicago, safety
glass, E&I 100;

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current and proposed Army-Navy requirements. At Lockheed, the AV-11B Big Red reached the PTV stage for control of fuel to engines, transfer of fuel from tank to tank as well as for refueling. Continuing, as does, the qualities of efficiency and dependability with the same production facilities as he found at General Concepts, the AV-11B bears the stamp of Lockheed approval as a series of the industry at large.

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W - *Wright Aeronautical Corp.*, Inc., Portland, Oregon, aircraft parts, *HELAR*, 115, 116.
X - *Xerxes Engineering Corp.*, Los Angeles, aircraft parts, *HELAR*, 115, 116.
Z - *Zimmerman*, Corp., Los Angeles, aircraft parts, *HELAR*, 115, 116.

- E. C. Carter Co., Inc., Los Angeles, Calif.
- Carter Carburetor Co., The, New York, N.Y., carburetor engine parts, HED-1716
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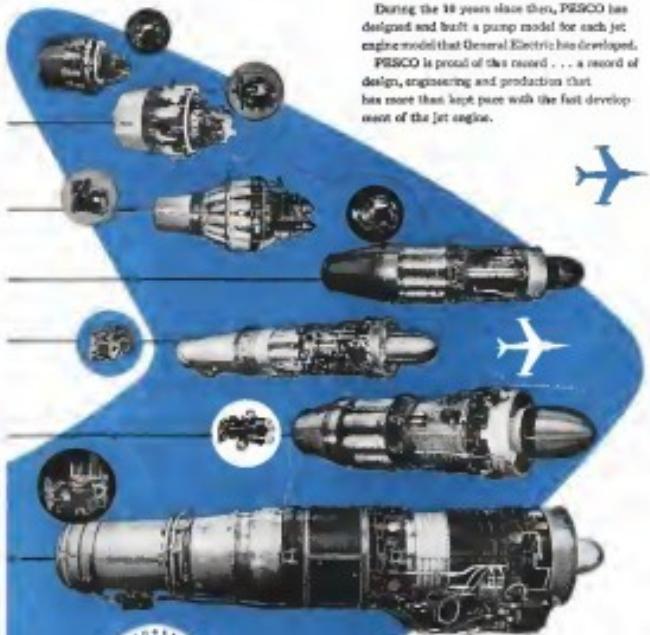
It's been a fast 10 years for PESCO too!

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Jet development

When General Electric completed America's first aircraft jet engine in 1942, and jet-powered flight became a reality, a PESCO fuel pump made certain that it was fed all the fuel it needed.

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frequency) so short a crossover with a 36-fer bandwidth can achieve all this on a single closed setting.

The 10-kilowatt transmitter antenna presents no difficulties. Yet it permits a plane moving from one transmitter zone to another to talk to each other without changing receiver channel setting.

► "Private Line"—another way to reduce the need for VHF channels is the "private line." As mentioned, the gyro test would permit ground transmission of many command messages to any single plane or to no more than two.

In a time sharing situation, transmitting first to one plane, then to the second, then to the third, etc., then back to the first, etc.) The private line system is expected to operate on a single channel. To do this would require that each plane be able to store its message until it receives its next transmission.

U.S. activity, as described in DATA, centers on the use of a new radiophone tube which gives a potential TV-like presentation on the cathode. The new tube is capable of showing its messages between transmissions.

Major interest in private line appears to be concentrated in the U.S.; the EATA system does not yet seem generally needed in international operation.

► Separated Antennas—Knox spends at 250 mph, suppressed whistler (inverted flux, or nearly so, in the



GUNSHOOT RADAR ON LINE

Gunship radar, mounted with gun U.S. jets at the shooting edge of the SAC in Korea, is the first radar to be produced in an assembly line house, according to Control Electronics, three subcontractors. The unit was developed originally for the Navy, but it's now standard for USAF and Marines as well. The radar automatically determines target range for the commanding pilot. (Aviation Week Feb. 25, 1952, p. 65).

GYROS
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► Eclipse Pioneer, one of the world's largest producers of Gyros, has developed a series of direct reading and remote transmitting Gyros for radio stabilization, navigation, remote control, automotive pilots, and other mobile airborne applications.

Typical of these Gyros is the type 2415A, a new axis, gyroscopic remote Tested Gyro Transmitter designed for use as a remote control reference shaft-tilt indicator as required. The transmitter is essentially an electrically driven, vertical rotating gyro with separate station transmitter mounted on the gyro and both axes shielded in an aluminum case, protection against overcurrent conditions is accomplished by means of a double "Q" ring bypass air tight seal. Signals are brought out on shielded leads. External panel and ranging unit are also available. Other types 2415B, 2415C, 2415D, 2415E are in preparation while the case, probe, lead wire arrangement is being determined. A means of mounting holes is required in order to employ this feature.

* * * * * Some new or revised controls coming soon

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Specifications for Eclipse-Pioneer Gyro Type 1415A

Dimensions: 11.5" high, 47.5" wide, 16.5" deep. Weight: 175 lbs. Power requirements: 115 volt, 60 cycle, 15 ampere. Weight reduced by 50% of the 1415A by use of a smaller motor, power source, and a smaller case. Power requirements are reduced by 50% of the 1415A. Weight reduced by 50% of the 1415A.

* * * * * Some new or revised controls coming soon

Power Requirements

Power rating: 115 volts, 60 cycle, 15 ampere, 115 VAC, 60 Hz, 15 ampere. Power source: 115 volt, 60 cycle, 15 ampere. Power source: 115 volt, 60 cycle, 15 ampere. Power source: 115 volt, 60 cycle, 15 ampere.

Size and Weight Information

Overall weight: 175 lbs. Dimensions: 11.5" high, 47.5" wide, 16.5" deep. Weight reduced by 50% of the 1415A. Dimensions: 11.5" high, 47.5" wide, 16.5" deep. Weight reduced by 50% of the 1415A. Dimensions: 11.5" high, 47.5" wide, 16.5" deep. Weight reduced by 50% of the 1415A.

For detailed information, write to Dept. H

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BEDFORD, NEW JERSEY
Export Sales Office: International Airlines, 19-565 Avenue, New York 16, N.Y.



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NEW DESIGN EDITOR:
This Superhero comes in
laser mode, analyzes
interference patterns in
real time, and can
detect all changes in
aircraft position and
velocity along a path.



EDITOR'S NOTE: You get fast, clear, crisp hearing with the "Superhero's" greatest tool—*Recon*. This new device can analyze and detect interference patterns in real time, and can detect all changes in aircraft position and velocity along a path.

SUPER EDITOR: Come here, guys, more info. Interference is a major problem, may be obscured by noise, and it's changing. **NARCO** has the answer.

ONE EDITOR: **NARCO** has a flexible VHF receiver. It's dual-channel VHF receiver. It can receive and transmit. A three-axis gyrostabilized antenna is used.

For more information, call or write to:

The compact Superhero is the result of all single-unit VHF designs; years come to it from any aerial station within receiving distance. Rapidly built, yet a minute in electronic perfection, investigate the **NARCO** Superhero today! Immediate delivery. See your **NARCO** dealer now [contact to coast sales and service] or write for bulletin.

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bulge or bulges) are effective from the standpoint of reduced drag and drag, and lower maneuverability. But they should be designed into the airplane initially, not added later.

Some aircraft are already in use and fail to give results comparable to outside reference. There has been some difficulty in obtaining the desired reduction pattern at 1,000 ft. This might be overcome by using a dynamic trim system.

In the diversity system, two antennas are used. Their location is chosen so that between them they will give full spatial coverage. An electronic switch automatically connects the receiver alternately to each of the two antennas. Experimental tests to date indicate definite improvement in long range communications.

Improved Radiotelephony—The experts suggest that the intelligibility of radiotelephone (R/T) communications can stand considerable improvement. They suggested several ways to improve it:

- Careful selection and limitation of the R/T vocabulary.
- Better soundproofing to reduce cockpit noise.
- Use of "speed clipping" (a form of modulation) to implement more important speech words.

• Use of cockpit loudspeakers, not only after cockpit, have been recommended.

- Improved quality of microphones and headsets to prevent deterioration of quality with time.
- The IATA speakers fit earcup and dynamic type make



FLY CATCHER

These unusual devices fulfill the part of *Nightingale Fly Superhome* and by the company's account can study using modern vision flight conditions. Activated by the radio operator while in flight, the explosive capsule at 5,000 rpm for 30-40 sec to collect wing insects, are then withdrawn into a refrigeration chamber in the nose. Rate of icing is later determined in Nightingale's laboratory. A plane moves at the plane's normal indicated air speed, outside air temperature, altitude and various pressure beneath the seal unit.

rather less deterioration than carbon units.

* Training of flight and ground personnel in capacitor usage practices, using tape recordings and repeated play back. • Some 250000 instruments—navigation equipment for the test of communications, computers, switches, connectors, transistors and diodes in design features of instrument and wire interconnection equipment.

• Dual signal instrument designs to avoid:

* Signal and noise losses.

- One long and one short pointer on a single instrument, it can be coupled with other.

* Too many scale gradations, or too fine gradations. Minimum angular distance between gradations should exceed 5 degrees.

* Dual indication of dual equipment on a single dial, such as engine speed and fuel quantity. Dual indications on a single dial can lead to feathering the wrong engine in an emergency.

* Cross-over detector retards for increasing instrument values. Cross-over value was called twice normal.

There was no opposition in calculating several pieces of information in a single instrument such as the Space Zero Reader, Collier Approach Horizon and Curve Indicator, and Pointer Ordnance Mag. Many who attended the symposium called for instruments which present information in a manner which gives the clearest sense of contact flight.

For Zero Reader-type instruments, indicator displacement from zero by degree of altitude should be in such a direction that operation at constant velocity at some deflection return indicator to zero position. Instrument should be designed to be read at a glance and not require careful scrutiny.

* Standardized Equipment—The old bogieons of airlines meeting operating requirements designed to their own individual needs and specifications requirement was noted by one manufacturer. He said that if required, 21 standard parts could be installed in 12 to 17 planes. All components were used and in a single type of aircraft. The difference in cost between the basic system and the most expensive special installation was \$50,000 per plane.

Airline representatives commented by pointing to an airbus used to standardize certification within its own fleet. However, they agreed in principle to the need for shrinking the degree of divergence in component requirements between systems.

* Miscellaneous—Other studies showed that total equipment cost is low compared to the maintenance expense throughout the life of the equipment. This considered the simplicity and reliability we more important than size and weight. This explains why the size

is not going overboard on maintenance and maintenance techniques.

The use of a new power generating system (in place of current 25 v d.c.) appears effective to NASA members because it can reduce weight and increase reliability. Additionally, it would eliminate the need for the many inverters now used. A limited amount of d.c. power would still be required.

Pulse Transformer

A new miniature pulse transformer, built into a solid-state base, is now available for use in blocking oscillator and other pulse circuits. The pulse former, manufactured by Berkline

Laboratories, is available for use in microsecond and nanosecond waveguide ranges. It is designated type PE-1 and sells for under \$10.00.

Berkline Laboratories, 935 Beaver Brook Road, Lexington, Mass.

Tiny Capacitors

New polarization paper capacitors designed to operate through a wide temperature range (-50°C to +125°C) without derating are available from the Alvin Corp. The units are said to have excellent capacitance stability over the entire temperature range and to have a low power factor.

Alvin Corp., 255 Guest Ave., E. Newark, N.J.

**External
Wrenching
Nut Retainers**



Nutt-Shel

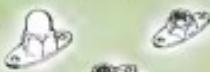
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WHAT'S NEW

New Books

U. S. Fighting Planes-1951, by Lt. Cmdr. D. W. Cox, Jr. (ISBN: 04-04-00000-0). Published by Aeronautical Publishing Co., Inc., 450 Lexington Ave., New York, N. Y.

Two dozen of the top current USAF and USN squadrons are portrayed and described, with specifications, in the back. The photographs are large and

show the planes' characteristics well.

The book is planned to develop recognition value of important U. S. military planes with their key features given. There are some date data that have slipped (such as the B-57's armament) as not carried, but as regard "restricted information."¹¹ The author also clarifies all gun armament as "medium guns," whereas many of the planes have canons. But it seems to be a good buy at the price.—E.H.

Design Manual for the Repair of Aluminum Alloy Structures, edited by

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MILITIC NO. 700 removes stain and discoloration primer from modified aluminum.

MILITIC 6-6 keeps paint shiny floors water resistant clean.

PAINT-ROBEY removes most paint.

PAINT-ROBEY removes oxidation, phosphates abrasives.

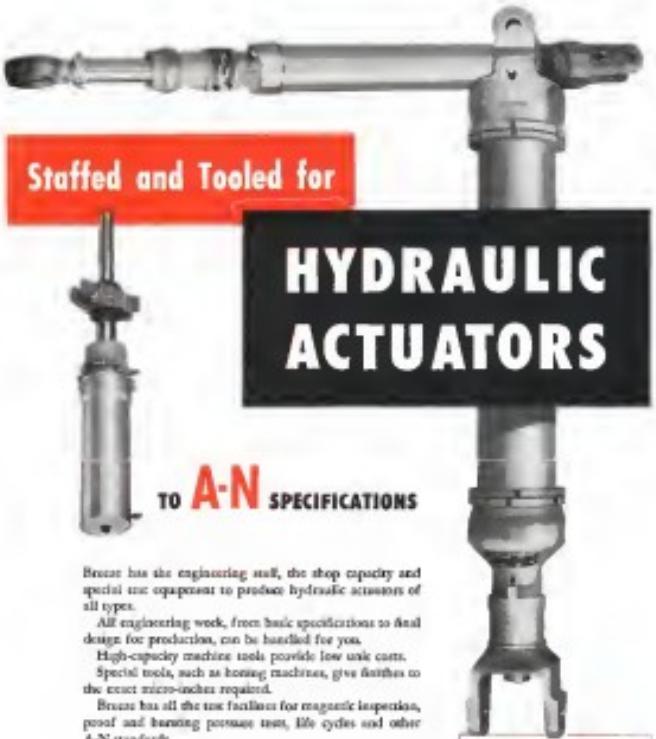
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Tolson's data and illustrations of rot-Blow lip seals by Frost & White and division of Niles-Brown-Pool Co are carried in new catalog released by writing P.W.W. at W. Blvdwood 1 Court. Pechiney booklet Series II-Polsis on the Corp. An Chap, can be sent postpaid, three 10¢. Write Minnesota Chemical Co., St. Louis 4, Mo.

Aircraft balloons and applications are outlined in folder being distributed by Santa Aircraft Co., 2280 Pacific Beach, San Diego 37.

New Publications

Another Quar. 1951 publication, and seventh, in their 1951 series No. 7, is compilation of various fast, direct assembled under 16 headings such as lists, dimensions, dimensions, thermodynamics, structures, flight testing, etc. The answers to the questions are carried opposite the questions making it convenient to consult.

Published by AeroData, Box 905, Sea Cliff, Long Island, N. Y., 114 pages, price \$1.50.

Publications Received

• Technical Reporting, by Joseph N. Hillman, Jr., published by Bausch, Lomb and Co., 217 Fourth Ave., New York, N. Y. 1952, \$4.75. A handbook for engineers, scientists, technicians, business and government workers concerned with photographic equipment.

• The Army and Free of France by Douglas D. North, M.D., publisher, L.J. Goss House #2, Doubtless, published by International Underwriters Assoc., Inc., 227 W. 33rd Street, New York, N. Y. 1952, \$3.25. This study informs many Americans about the remarkable story of U. S. Air Force while it is still unknown in England. The author traces up the role of aerobatics on the cause of war and the role of aerobatics in the cause of peace.

• Standard Design Manual for the Test of Aircraft Components, With Particular Emphasis on Aircraft Components, edited by Howard M. Jones, published by Johnson Reprint Corp., both parts I, 1, N. Y., 1952, \$1.50. Covers design of aircrafts, aircraft structures, skin repair, inflation and deflation, wing repairs, tailoring repairs, etc. Each reprint covers 70 or more pages of original material.

• Basic Aerodynamics by Merrill F. Tyson, published by Aero Publishers, Inc., Los Angeles, 1952, \$1.70. An elementary text book with more than 200 reproduced photographs and drawings, and definitions of aviation terms.

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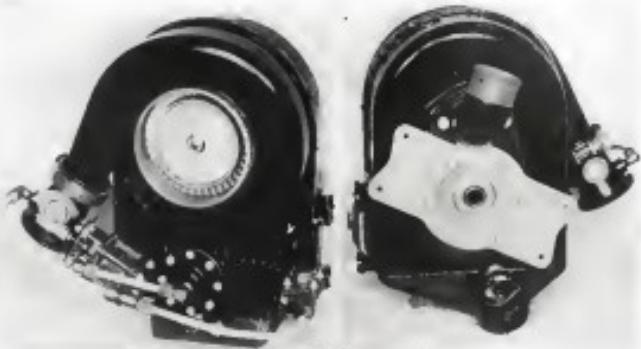
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EQUIPMENT



AIR TURBINE DRIVE is designed for delicate jobs. Cooling air comes at lower feet right pastel, flows through outer duct.

Air Does Hairline Job in Turbine Drive

TP 15-2 unit provides extremely fine speed control despite supply-demand changes, Stratos says

By Scott H. Reisinger

Air has been harnessed to do a dandy drive and control job by Stratotec Div. of Fiedeldeit Engine and Aerospace Corp. The company's new air turbine drive will perform with almost lightning accuracy, despite drastic up-and-down air supply, Stratos claims.

Air, in effect, also computes and solves problems to keep the turbine drive at its own head—at a constant speed—despite varying conditions imposed by fast changing altitude, temperature, engine power settings, reheat rates and other factors existing in a jet fighter in flight.

In the TP 15-2 Air Turbine Drive, details of which are revealed here for the first time, air-operated controls keep the "steady state" speed of the turbine drive within 1% of that specified. "Actually, it can be less than that," says Stratos engineer. "We can't even measure the variance sometimes."

►Job to Bamboozle—The TP 15, like all others of its type, blinks at how the jet engine compressor section. It was originally developed for the F2B1 Blue

Shore Navy fighter, to drive a radar receiver at constant speed, but it can be used for driving other accessories. Its broad importance is of utmost importance in modern war since flight situations in power supply will likely increase.

Hottest compressor air, up to 450°, is ducted to the drive, then split up for several jobs. It runs one, of course, to make the turbine wheel rotate (at 22,000 rpm), turning the drive shaft (through reduction gearing) at a speed of 4,000 rpm. Other is a shutoff of the compressor inlet to keep speed of the turbine constant, regardless of loads imposed by the alternator or changes in power supply.

To short the controls is an oscillating and start-dose duration from both ends—changes in the driving and driven ends—and ends do it with a fine precision. That is a large order, perhaps roughly comparable to a person holding two shaking hands with a soap dish in each hand while keeping his arms down at his sides in a culture shock.

Turbine variations, caused by sudden changes, never cause speed to vary more than 5% and then only for about



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Inconel "X"

may hold the key
to your aircraft
design problem

Suppose you wanted an alloy that met these specifications:

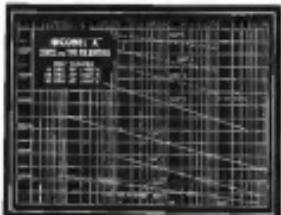
- High elastic limit above 1300° F.
- Outstanding high-temperature strength
- High resistance to oxidation
- Readily fabricated into shape needed
- Weldable by commonly-used methods

Then, Inconel "X" is your alloy! An age-handsome alloy, it has every one of the properties mentioned—and a good many more. The jet plane afterburner bellows shown above is one application where Inconel "X" filled the bill perfectly; there are countless other aircraft jobs where it also meets all needs.

Let's take a brief look at some of the principal characteristics of Inconel "X":

After suitable heat treatment, it is an unusually strong alloy both at ordinary temperatures and at red heat. It offers excellent resistance to oxidation at high temperatures.

Its stiffness, or modulus of elasticity, is high—about equal to that of alloy steels.



ALL INCONEL "X" bellows prove, for over twelve design changes, that no better material can be used. In addition, their unusual high heat, low thermal-shock, and oxidation resistance make them ideal for aircraft applications. Above, another afterburner to couple extra afterburner power with low efficiency. Designed and manufactured by J. L. Alford Company, San Bruno, Calif., the bellows is made from disk-shaped "X" plates which is welded into a circular bend—and then corrugated.

Resistance to impact is good, too. And you also have formability...machinability...good bearing and lubricating qualities. As for welding, that can be accomplished by most of the commonly-used methods—including inert arc, inert gas metal arc or atomic hydrogen arc, resistance spot and seam, and resistance butt. In short, Inconel "X" is the kind of metal you can work with—and get the results you want.

Naturally, there is not space enough here to cover all of the properties and characteristics of Inconel "X". So we've prepared an 80-page reference manual and packed it full of the kind of information we thought you'd like to have. You can get a copy—without charge—by dropping us a line and asking for the "Inconel "X" Data and Information Manual." Write for it—now.

One final—and important—point: Inconel "X", like other metal alloys, is now an extended industry because of defense needs. So it is important to include NPA rating and complete end-use information with all orders.

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say, and no heating either. (Drop engine when running speed levels off at a steady state below that for which the device is rated.)

The control means change is speed and the rate of the change. In this way, it determines the extent of corrective action. Heat at the seat is a speed governor, covered "by some very basic patents," States told his reporter. It is the governor that permits handling of increments of 40° F. in one second.

So predictable size is a requirement of equipment at this type that it can be built to operate stably within 2% of the maximum air pressure developed by the jet engine, company engineers claim. All the performance capabilities of the device are driven by air which can be cycled out with a steady flow from the jet at only 19 psi. Air pressure to the turbine wheel itself is kept no higher than 5 psi, by the motor which loads up supply air as high as 85 psi when the engine is at full power.

Despite this wide variation, reaction time of the control is always the same. This is true even in a condition, say, of low pressure, where the turbine must be operated twice as far to gain the same result as at a higher pressure, States says. Automatic gear control simply moves the throttle valve at half speed.

This is the main answer but it's not simple to do. States points out with all the expandability and compressibility and other factors encountered when dealing with air.

► **Simple Design**—Moreover, while the control gives fine performance, it is made with simple parts and methods. It is strictly pneumatic and mechanical in operation. No delicate microswitches have been justified. Every thing has been either stamped, die cast or fabricated in a screw machine. The only slight delicacy is in the control rod design which, according to the firm, "The action is practically self-centering," States says.

► **High Powers**—With the air turbine operating on the low controlled pressures in it does in the B-52s, it is rated at 15 hp, but it can give 90 hp if higher pressures are used. Theoretically, if the gear could stand it, a unit of this size could deliver as high as 175 hp, States says.

Given incidentally, and alternately too, one could be a low-costing general application device by the combination of fire and air cooling flight. That explains the two units in the massive jet pod of the craft. They are only for cooling purposes. In the front vent air enters the duct opening at the lower left, passes by the automatically controlled throttle, goes on through the slot around the turbine wheel and out over through the outlet opening as the scroll.

The complete equipment weighs 15

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be most easily satisfied for concrete surfaces or flight and on the ground, if need be.

Stearns feels it's important, for the jet, to be as lightweight as may that it can be. And by using air, it avoids many problems of liquid systems—if used, air here is not at critical, for systems.

Stearns' idea is to instrument the aircraft in a wide range of states, up to 300 mph and down to approach take-off rates. Units up to 200 hp can be built, if desired. They can be used for a wide assortment of tasks—driving wing flap retraction (in both directions of rotation), fuel pumps, hydraulic pumps, compressors and other gear.

The company will produce drivers for aircraft supply and return systems at high as 4000 ft/min. of 270 psi and environmental temperatures from -50 to 200°F. In general, one case should operate one receiver, yet more, for most satisfactory results, the company believes.

Mr. Air Experiment-Stratos points to the use of aircraft as the culmination of ten or eleven years of experience in development of engine superchargers, cabin superchargers and refrigeration in cooling equipment for the modern aircraft at low altitude.

Driven as such as these offer a feasibility and reliability advantage, the engineer points out, so that the present concern sees that otherwise would have to be driven directly off the engine to be located at will in the aircraft. This would complicate and increase the weight.

With jets it's easier that diversity of

the envelope will not be needfully enlarged by a pressurized auxiliary. An economizer can be placed where there can

be most easily satisfied for concrete surfaces or flight and on the ground, if need be.

The boom is fitted to the hook of a

truck, supports the undercarriage in its

rest, and is tip. From this vantage point he controls movement—up, down,

left and right—with six low-

pitching wings to develop power.

Vernon points out that the plane can be driven from the ground in a fraction of the time normally required, says Dowell.

To avoid trapping the boom, his cage, which has a 500-lb high pressure rating, is self leveling, regardless of the angle the boom may assume. The cage also is completely insulated thermally, the freezing point of Measles being -24,000°F., protection and the whole gear mounted on the boom in special, heavy-duty insulation. Vernon

serves, such as compressed air, can be provided at the cage.

The boom can assume any position

through a 90 deg. arc from horizontal

to vertical and at any point can be tilted

up or down. It can be rotated 270

deg. No outriggers are needed.

Inside the truck, there is a depolar-

ized set of controls.

The boom looks like a combination of the engine steps. When out in air, it can be retracted for traveling, providing 100 ft clearance. It can be mounted on any car 2 tons or larger truck or the day house from the rear of the cab to the rear side in a space as 102 in.

Dowell Co., 815 S. E. Main St.,

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The engineering department that continually produces the "best" in the industry—B-53, P-51, T-28, now the P-51 Sabre jet series; A-1, F-86, F-100, F-102, F-104. But the company is not limited to its own designs. It has helped to bring to fruition a host of the advanced ideas that are shaping today's aerospace and the future of aviation. Become a part of the outstanding aircraft industry that is contributing to the safety of our country by applying for employment or apprenticeship at North American. Please submit a summary of your education, background and experience.

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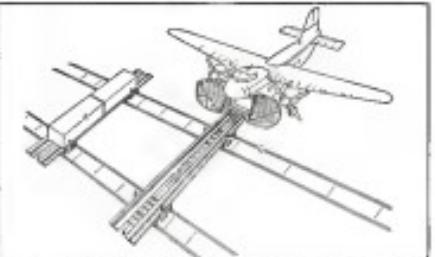
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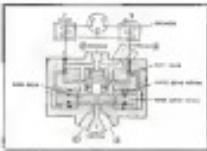
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Electronic Manufacturing Engineers

and does bond without method—considered the most durable. Kelle says. In those cases where the new binder can't be used, the firm has two other remedies to fill the gap (Densol A and Densol 3-L), which prevent solvent removed by the island dress, spray or brush-on technique. Use of Kelle products, according to the firm, virtually eliminates all bond cleanup.

Kelle Products, Inc., 1539 N. Main St., Los Angeles.



English Valves

A hydraulic selector valve for operating pressures up to 4,000 psi is being offered by Denys Equipment Ltd.

The valves are entirely self-contained, controlled by switches in the cockpit, and are designed to make rapid reconnection with minimum pressure drop. The model shown in the sketch above is a two-position type. Model 4600 Y. It provides a four-way, three-position selector, with a neutral position. Other three-way, two-position types, with or without a neutral position, or with flow to the selected source either open or closed after de-selecting, are available.

Normal flow capacity of valve is 10 gpm/rev. They are built for operation at temperatures down to -41°F. The single solenoid type weighs 1.8 lbs and the twin solenoid type 3.6 lbs.

Denys Equipment Ltd., Ark Court, Cheltenham, England.

Resists Skydrol

An insulator was designed to resist chemical action of Skydrol, a non-flammable type hydraulic fluid and low temperatures. It is being marketed by Separast Mfg. Co.

The wire reportedly meets Spec. MIL-W-5374A, resist oil, grease, finger, abrasion and flame. It is pretreated by an extruded preservative insulation made from Grec polymer also ride plastic and silicon jacket. The glass insulation won't crack at a temperature of -50°F, withstands 5,000 v at 60°C and, in complete wire, is a glass fiber lead sheath. The Aviation-Glass insulation, melt extruded 12,000 v over 1 mil, meets military spec. 45000. A Type III wire has glass fiber lead covered by Grec.

Separast Mfg. Co., Boston, Mass.



SHELL AIR QUIZ

Question:

Does air travel cost more or less per mile than 10 years ago?

Answer:

While the cost of living has almost doubled, air travel today costs less per mile than a decade ago.

Question:

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AIR TRANSPORT

'Public Interest' to Decide Colonial Sale

- Carrier cannot count on selling to highest bidder, CAB warns in letter to President Dykes.
- Nyrop action is prompted by Colonial rejection of merger with National and action asking for bids.

By F. Lee Moore

Cab Accuses Board Not Raised Colonial Airlines President Board Dykes that he cannot count on selling Colonial to the highest bidder. The necessary CAB approval will depend on whether the merger is "in the public interest," the Board says.

What prompted the warning letter from Col. Clark C. Nyrop, Nyrop says was the fact that Colonial's bid for the night route with bid share for operating that week. A National Colonial merger was open May 14 by a Colonial stockholder majority claiming National's price wasn't as good as an offer of Eastern Air Lines.

The new action disturbed CAB, especially since the National deal already had won approval of the Board, whereas "the Board has not to date authorized the same preliminary bidding (of Colonial merger) with any other airline," Nyrop said.

In his letter to Dykes, Nyrop notes that, as a matter of fact, the Board may cut down the price, even if it approves the rest of a particular airline acquisition deal.

► CAB Terms—In his warning to Colonial, Nyrop states the main consideration of the Board in approving any merger or airline purchase:

- Further traffic integration
- Improve route structure for the U.S.
- Create desirable competition
- Avoid excessive competition

He also strongly advises: "On this one, CAB says: 'The Board must consider whether the combination would tend further to imbalance the competitive relationships existing between the two or current comprising our air transportation system.'" Since Washington observers think that applies the Board might prefer National over the largely Eastern, though CAB might not disapprove an Eastern purchase of Colonial.

► CAB Sets the Price—"The Board, of course, must pass upon the justness price of any agreement which shall be submitted for approval and will do its utmost to protect the public and the

stockholders from either an excessive purchase price or an unreasonable low purchase price," Nyrop's letter states.

The point of that quote was the Board's decision on the Northeast Airways' top of Midwest Airlines in 1949.

The contract price for the bankruptcy Midwest, which hadn't operated in four years, was \$75,000. The Board said: "The proposed price appears very much like \$10,000, the Board said, and that was the price CAB would approve. As far as operating costs and good will, CAB stated." It is of course in the public interest to secure the transfer of certificates as though they were a speculative concern."

So regardless of what actions can be had for Colonial this Thursday, CAB may well fix the price value of the company and prevent only.

► No Auction Block—To make the situation even clearer, Nyrop writes Col-

onial and follows: "You have advised the Board that Colonial Airlines has granted the Board authority to sell the stock block as it will consider the bids submitted by all concern to whom an invitation was extended. This clearly exists with it the implication that Colonial is more interested in the purchase price of a sole of the company than it may be in the various other aspects of the public interest."

► Board Procedure—The Board has a preliminary conference scheduled for the Wednesday to investigate "whether a merger or consolidation of National and Colonial Airlines would be in the public interest and would be consistent with public convenience and necessity."

In his letter to Dykes, Nyrop states that "Colonial is a substantial airline and certain public benefits may result from the mitigation of National and Colonial."

Lod Influence Grows

(McGraw-Hill World News)

Tel Aviv-Increased use of Lod Maruah International Airport is an important step between Europe and the Far East. It is seen as evidence of diplomatic relations between Israel and Japan.



MODERN AIR TERMINAL TO SERVE CHICAGO

This is how the new terminal building at O'Hare Field, Chicago, Ill., will look when completed, with five "lager" wings capable of handling 90 transports simultaneously. Concourse levels will be connected to fast lanes by ten escalators and elevators. Total enclosed floor area at the completed two-story terminal will be 15 million sq ft. Underground pits containing fuel, jet and cold water tanks, carbon monoxide exhaust and air conditioning ducts, electric power cables and access will run east of the plane platforms which are to be located on the surface.

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Growth of Civil Aviation Since 1941

During 11 years, 1941 through 1951, civil aviation mileage doubled, revenue passengers of the scheduled airlines increased six times, the number of U.S. airports 2.5 times and Civil Aviation Administration personnel more than four-fold, according to information submitted by CAB to the Senate Appropriations Committee. Here is a breakdown of information supplied by CAB:

Year	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Controlled Civil Airways											
Mileage	16,962	38,689	41,566	42,349	45,295	44,145	47,829	56,089	61,389	79,353	78,484
Flights, Carried by Scheduled Airlines, Commercial	3,000	3,486	5,229	6,267	7,062	13,254	18,249	14,556	16,686	19,822	24,646
CIA Employees	6,019	8,004	16,120	21,492	19,027	12,703	24,884	17,004	14,932	30,845	16,296
U.S. Airports (Private, Commercial, Military)	2,400	2,109	2,740	3,422	4,025	4,000	5,720	4,414	5,104	6,415	6,250

Civil Penalty Power For CAB Is Urged

Complain before it alone may give Civil Aviation Board a new role to look over penalties.

Legislation giving the Board authority to impose civil penalties for economic violations, up to \$1,000 for each offense, has been approved by the Senate Interstate and Foreign Commerce Committee. Required by CAB, it would apply to aircraft as well as noncommercial carriers, but it is directed at the railroads. Board would have authority to impose fines and settle these out of court.

CAB at present can take two actions with economic violations:

- Issue a cease-and-desist order or no vote suspending authority;
- Institute, through a U.S. attorney, a civil action for an injunction or a criminal action.

The Senate committee said:

"From a practical standpoint, suspension and revocation proceedings can only be used as a last resort in case of knowing or willful violations, and the economic orders are not appropriate except in cases of new and serious violations. The only other remaining remedies for economic violations—cease-and-desist orders and injunctions—operate only against future conduct. Thus, as offenders are in a position at this time, by exercising a little caution, to engage in illegal practices until an enforcement action is commenced and may even continue such conduct during its pendency."

"The Senate bill to cap economic awards from railroad conduct over considerable periods of time without undue danger of causing insidious penalties. Availability of civil penalties would tend to take the profits out of economic violations, and in this way provide a strong deterrent to unlawful

conduct. Experience has shown that soft and mild punishment is a hopelessly weak defense. Any lenient punishment tends to debilitate. The civil penalty would permit the Board to act swiftly in dealing with most offenders."

European-American Case Given Boost

Chances of European-American Airlines getting a CAB certificate to fly trans-Atlantic air cargo flights appear to have taken a slight turn for the better, although the Board is still expected to oppose the EAA's application. A trans-Atlantic mail-service air cargo airline would be of material assistance in meeting wartime military air requirements.

Washington observers believe the Bill will help European-American much with the Civil Aeronautics Board, but it may run into some procedural snags.

The President must approve all CAB decisions on international routes and operating certificates. The Board is expected to vote yes in 1 to 3 against EAA's application this month, then the CAB decision will be sent to the President, who generally goes along with Board decisions but has overruled it in some notable cases.

European-American's application is consolidated in the trans-Atlantic commercial case of TWA and Pan American. The Board and the President are expected to review the TWA and PanAm complaints in about three months from now.

Load Factors

The greatest load factor—strength craft load factor—the first quarter was the same as a year ago—73%. It was down two points from calendar 1951, however.

Per-Cent Load Factor

Quarter	Year	Per-Cent Load Factor
1952	1951	73%
Second	83%	83%
Third	79%	80%
Fourth	71%	71%
National	71%	80%
Northwest	68%	76%
TWA	77%	76%
United	79%	74%
Western	67%	76%
Airway	71%	76%
PanAm	71%	71%
FBI and MA	unadjusted	

likely to point out, as in the past, that the purchase and operation by the air transport industry of new long-range transport aircraft as cargo configurations is the only answer to a shortage of aircraft.

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Northwest, National Merger Hits Snag

Resumed negotiations between Northwest and National Airlines reflected Northwest's decision to drop its Capital merger application through the month.

However, just when Northwest President Carl Riske, National President G. T. Baker, and Northwest's management opposition stakeholders seemed to be reaching common ground, negotiations hit a snag.

What that snag is has not been reported yet, but observers note that there is more than one obstacle to any effort trying to close a deal for merger with Northwest. First, no market value is

yet, under book value and its financial picture is cloudy; thus financial facts make Northwest difficult to price.

Secondly, dissident stockholders of Northwest Inc. are a strong position, so there has been no working majority in Northwest that could be counted on to carry a merger deal forward.

Ex-Official Hits African Air Agency

(McGraw-Hill World News)

Johannesburg—Short criticism of the government division of civil aviation in South Africa from another ex-member has reached the public.

Col. F. C. Elliot Wilson, who has resigned as Chief Inspector of Flights in the division, has stated that only the staff of the state-owned South African Airways pilots had performed an disastrous, since not only are negotiations still continuing but the advice of experts is being ignored by the government agency.

Colonel Wilson, in the past few years, has Col. Wilson has determined undoubtedly. Dissidents have been made and policies forwarded that seem to me to carry out, he says.

Wilson—who is an expert pilot and one of the only two South Africans to have been awarded the Master Pilot's Certificate of the British Empire, up holds another dimension of the agency which has emerged recently. Col. D. G. Haywood, Haywood quit in May as a spectator in order to make public the "grave financial crisis" faced by SAA pilots and other operators, whose flights were under bid weather conditions.

AA Treasurer Sees Peril In Rate Ceiling

American Airlines vice president treasurer W. J. Hogan, looking to the future, has warned of possible severe rate ceiling changes of concern to investors and airline debtors, despite recent indications that the industry is moving toward a more stable financial situation.

He pointed the portent is follows for the mutual benefit of the Cleveland Society of Security Analysts and, as should, the ultimate evolution of Civil Aeronautics Board—controller of airline fares.

• CAB ceiling on fares may plunge some airlines back to the schools style "before you buy" when a bond approach is taken.

• We are still hopeful that the CAB will grant operating authority in mid-June just so the market can determine the 75% round trip distance.

• Unit costs in 1952 will be higher

than in 1951 and in market value will undergo adjustment to rates and fares will be necessary."

• The industry needs at least five years of good solid earnings to give investors assurance it has reached a reasonable degree of stability.

• Capital consumption of the industry should total \$150 million for new planes. "Another \$150 million may be required before 1955 with the advent of heavier aircraft."

• In a situation, "subject might suffer as severe as volume," because that's when the industry makes its greatest contribution to the economy.

• American's 1952 earnings will be 10 to 15% above 1951.

• Net profit "may improve immensely with those of the past two years, although the profit margin will be lower."

• If 1952 volume reaches expectations, the industry would require an annual increase of only a little over 3% from the year 1951 to 1955 to fill all capacity at a good bid fare."

S & W Makes New Bid For Certification

Seaboard & Western Airlines, a consolidated international airline last year, has asked CAB to reconsider the denial of the company's application for a trans-Atlantic and European all-cargo route certificate without delay.

Seaboard and SWA "disagreed with the views of the Department of Defense" in denying the certificate, and quoted a letter from Undersecretary for Defense, Steven L. Johnson, in which he said: "The Department favors the certification of an all-cargo service in this area" and "whatever practical consequences can be given to the air freight industry will be of special interest, as long as all cargo aircraft are properly equipped to meet military requirements in accordance with the Administrative Procedure Act pertaining to adjudication."

CAB appealed and the three appellate judges initially agreed on a decision but subsequently recanted the question to the Supreme Court, which declared that a question of law should be decided by the Supreme Court. Judge Walter Banton ruled that the regulation would remain published, however, and the Board failed to comply with the Administrative Procedure Act pertaining to adjudication.

CAB appealed and the three appellate judges initially agreed on a decision but subsequently recanted the question to the Supreme Court, which declared that a question of law should be decided by the Supreme Court. Judge Walter Banton ruled that the regulation would remain published, however, and the Board failed to comply with the Administrative Procedure Act pertaining to adjudication.

• The question now is whether CAB has gained operating authority, and on that fact has gone into limbo, as a new regulation that ignores that business.

• CAB under its adjudication hearing is upheld.

• The Seaboard government's stand on its international rights to conduct the litigation is its own way.

American's Coach Passenger Survey

An American Airlines market survey of its coach customers revealed:

- 61% are women, though women on coach flights 53% are men.

- 75% travel alone, whereas men travel with their wives 75% of the time.

- 75% plan to stay more than a week, whereas 31% of passengers on other flights stay less than a half week.

- 76% are middle aged, 90 years old, while 50% of standard fares are under 40.

- 71% are first class, compared with standard flights having 33% first class.

- 64% class travel income under \$5,000 a year.

- 65% travel alone.

- 51% choose the low fare as the reason for flying coach.

Noasked Case Goes To Supreme Court

Can CAB control the established business of a nonmember airline by regulation? That is the question the U.S. Court of Appeals, D. C., has thrown up to the U.S. Supreme Court, which next week takes the bill.

The question arose when American Airlines and National Airlines joined and got the right to operate under CAB from using a new regulation, limiting dividends to keep them afloat between major cities. Judge Walter Banton ruled that the regulation would remain published, however, and the Board failed to comply with the Administrative Procedure Act pertaining to adjudication.

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• The question now is whether CAB has gained operating authority, and on that fact has gone into limbo, as a new regulation that ignores that business.

• CAB under its adjudication hearing is upheld.

• Does it depend on interpretation of whether the CAB regulation does not affect the right "to engage in the conduct of the original operating authority"? Or does it wholly depend on some other condition?

COCKPIT VIEWPOINT

By Capt. R. C. Hobson



No Knots Now

The "one of the mission only" has stirred some concern that any other aviation issue of recent years, because of limited space permits us to raise the subject with special reference to the small CAB decision which rejected knots.

The status for the entire interest shown in this topic can best be understood by reviewing its history. ICAO established the method rule as a standard several years ago. The portion of the United States on ICAO matters is determined by the AGC (Air Contracting Committee). This is a government body composed of the Departments of State, Commerce (CAA), Treasury, Navy, Air Force and the CAB. These people voted, unanimously, to accept the ICAO proposal.

► **CAB on Tap:** Members of ICAO are bound by treaty to accept its standards. For both domestic and international flying, unless they do a notice of deviation. The Air Transport Association is that, regardless of whether by AGC and ICAO, each CAB has the authority to accept or reject. The Board of Directors will determine what existing civilian aviation. In this case, CAB, by its vote two years ago in AGC, reaccepted certain aviation before holding a hearing.

For a variety of reasons the vast majority of civilian aviation would prefer a hearing and expressed dissatisfaction with the proposed change. In a splendid demonstration of American democracy, CAB, by majority vote, reversed itself and yielded to the wishes of three people.

► **The Losses:** The list of participants in the hearing is impressive for it represents the backbone of American air power-civilian aviation. Against the change were the Aircraft Owners and Pilots Assoc., National Association of State Aviation Officials, Aeromedical Training Society, National Aviation Underwriters, the NPA, Flying Farmers, Aviation Council, Council of American Ambassadors from various and commercial fliers. The Navy and Air Force were in favor of the change. CAA's stand was rather ambiguous.

Most important fact to stand out is that one was that the average flying citizen did not feel that the change was justified. He was not convinced that ICAO and the problem of economic travel and military operations warranted the disruption of an otherwise system of measurements. This should indicate to the "international set" that more information about the work of ICAO should reach the flying public and that considerable same effort should be made to explain the reasons for changes.

► **Concerned Questions:** Some questions have been left unanswered toward the schizophrenia between ICAO, AGC, CAB, military standards and the flying public. Can CAB accept without reservation on certain of this sort before committing them? Is CAB the final authority or can ICAO, through treaty, override. To what extent should domestic flying as a democratic society decide its military requirements?

► **Classification Needed:** There is, of course, an unavoidable case for international standards. Preferably no group has displayed "international precision" over this point. As stated before in this column, ICAO has done much good along these lines and its importance will continue to grow. Similar controversial issues will arise in the future, however, so it would be wise to study the precedents which allow domestic flying to voice opinions in new changes.

As the writer stands civilian aviation does not have to go back at the time.

STRICTLY PERSONAL

RULES FOR BETTER SPECIFICATIONS FOR AIRCRAFT ELECTRICAL ACCESSORIES

(Extracted from a Company Rep in Dayton)

The reader will want no argument in writing specifications to be used by the Purchasing Dept. in purchasing aircraft electrical accessories. The specification calls will completely describe the required and the purchasing agent will have all requests fully, regardless of what may occur, and will always enable the Company to inspect apparatus as soon as overhauling, lack of parts in Cleveland, or other difficulties in connection with the aircraft. The reader will expect a long and happy life in our Company, and after that, may graduate to a civil service agency or Client Specification Writer.

Rule 1

A specification number should be long enough, but not too long, and include date, date numbers and revision letters. Following this rule will cause confusion in supplier's plant.

Rule 2

Always use the least significant word first. Example: See, assumes, does, looks, let, needs for due dates.

Rule 3

The sentence, "The following specifies how to fit this specimen" must precede reference specifications. Word on the phone, in the exact specified hours. Also, word goes around many hours of telephone procedure. These are not familiar with ICAO. However, a suitable list of reference hours may be obtained by referring to USAF Specification Bulletin 21, containing those dual periods. At least three references should be given, and at random from such lists of Bulletin 21. (This will keep supplier on toes.)

NOTE: A long list of reference specs is very desirable, since it not only makes a good impression on user but will impress the vendor with the thoroughness with which you consider your problem. The number of reference standards is also noted. If a single stand is used, should know that the reference word makes sense. On the other hand, if he takes on every one, you will know.

(a) He can't read, (b) He doesn't give a damn, (c) He can't think in our Company. (To Be Continued)

Flying With Angels

Sister Helen, there we go, back from Far East, and I am still here. I have seen her on TV, she was smiling, "You leave what TWA means—Traveling With Angels". TWA tells me all about dating our family whether that's good publicity or bad

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LETTERS

They Protest

On page 94 under *Streetly Personals*, you gave an EXCLUSIVE on "WHY I LANDED AT NEWARK" by one Merrill "Bob" Meigs. It seems to me that it should have caused an editorial protest.

Here we have an individual that is caught up in flying, a pilot, and it's patently cloudy about an adversary company with CAA. His solution many of the rules in the book and then says it was all to the good. Does he think that pilot and standards can replace the law? He fails to understand the safety of everyone else in the plane while he risks his existing plane?

Because he is a "Volunteer" in CAA (he blindly land at a closed airport (of all places—Meigs!) to see a friendly with CAA) does he feel he has to advise others that he had no choice but to do what the most fatigued of a low approach, thus eliminating the chance for a crash?

I have been associated with a major oil company as an aviation representative, flying a Sikorsky Vagabond for the past few years. During this period I have always been cognizant of my responsibility. I have seen collisions and accidents, and I have seen an oil flying in general. Most of the planes with which I am associated feel that some responsibility. Along comes this character, connected with CAA, and pulls a stunt like this.

Now

R. E. Gossen
814 Conner St.
Tulsa, Okla.

What sort of a run riot of "Bob" Meigs is over Vnr 12, month? Just part for that on the amateur pilot or that sort of an oil traffic man and reads the second paper. No cues (of other trailer) to gather.

Mr. Meigs appears to be a CAA representative. If the Air Safety division perhaps R. K. Washington, D. C.

Hi again, "Eduholic"! Since Mr. Merrill G. Meigs, on the May 12 issue, is a jerk, I would suggest that his recording values to CAA are out in the CAA division.

It is my suggestion since Mr. Meigs has a low altitude pilot and an amateurish attitude toward that he incapable for being used with a sensible and competent pilot.

Concerned Private

He Wants MiG Data

I am a present fighter pilot for the United States Navy—serving study assignment in some air force overseas while reading your magazine without pay. I am interested in getting some ground truth. Is there the USAF? Keeping the performance of the MiG-15 from the Russians. For security reasons:

Is there any way I could get the information desired for publication because then I would

know—and it is my business to know—these things.

Of course, says the Navy and the Air Force, and the Administration, that they will not release this information from the public because then the secret of me, myself would get very disclosed and make those bad boys stop flying fighters that were built in 1945 (and, in the case of the best, are grossly behind, 1951). The simple logic there is very little chance that they themselves will get to fly anything that approaches the performance of the MiG-15 in two years to come.

Even then although the preference figures are X, we are very cognizant of the fact that we will have to contend with the MiG-15 as a potential enemy.

Believe me when I say that I have no bones to pick with the Navy on this score. They have gone the long training, gotten the right equipment they have the best. The only problem is that the MiG-15 is not a master of maneuverability, but the best reason that the Administration has left the key down that the lighting for them lies in inferior equipment.

K. D.

First Missile Plant

With some encouragement we have decided to start writing and offering something for the last year has been the fact to build a guided missile plant.

This company hasn't plant for guided missile development and production in 1952. The plant is to be located in the state of Florida (specifically) but with certain

rights. The project set the mode of the vision of the George Halveson, and successfully passed through preliminary service tests and pilot performances. So far as we are aware, it is the first test missile plant to be built in the United States. Shortly after the news was presented to me the enclosed publicity on our work.

F. F. Orenstein, President
Orenstein Electronics, Inc.
1020 North Federal Ave.
Cleveland 3, Ohio

'Informative'

In a recent Aviation Week I read with interest an article entitled, "FAA Tries Again." De Leon Corlett* by Scott R. Kenyon.

May I respectfully offer my congratulations to Mr. De Leon Corlett? To me he seems to have done quite a pilot, as well as to others at NTS. His article presented extremely well and in a most sensible manner a new concept of federal aviation in the world of aircraft certification.

Some informative articles

such as this are a credit to the aviation industry.

Eugene T. Gossen, Public Relations Manager, National Industries, Inc.
117 Broad St.
Milford, Conn.

Research in Hiring?

Since time ago I wrote you a letter concerning my justifiably application for employment to vacate later in the seventh century Spring, I have made personal applications to two firms with totally different results.

In both cases I was accepted and offered a salary which was more than I expected. I began work within 30 days when my present work finished. The first, whose idea I scripted, will give me ample opportunity to continue studies for the degree of Bachelor's degree in a field of my choice. My work with them will include tool and machine design, checking and provision of advanced training program within the organization.

I think that the failure of my applications by most other clearly the following faults:

- The inadequacy of the current application form for Research and Design for a position of a person's capabilities and desire for a position.
- The inefficiency and lack of training and supervision of usage of our employees per se, which causes us to do designs and calculations in a haphazard manner.
- The present slow-minded policy of usage of our large firms in reducing its employees over 40 years of age, in spite of the fact that such persons are an enormous potential of much experience and control will then the younger application and a shorter duration of experience, education, and knowledge.

• The lack of proven testing apparatus to accurately determine a person's knowledge, skill and general fitness for the job for which he is applying.

I can see clearly an industrial field in which much research remains to be accomplished.

H. S. W.
Wilmington, Mass.

'Objective Reporting'

As much as I can see, I think very much that David Anderson's story of Apr. 25 on Greathead is a bit of objective reporting. We are concerned, plus being fairly accurate on the basis.

Bob Hayes, Vice President
Executive Company of America Inc.
Plainfield, N. J. L. N. Y.

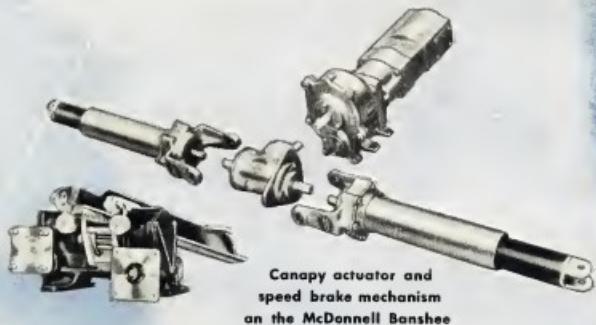
Correction

[A typographical error in an editorial on the price of fuel caused American Av. Head Vice President William J. Morris to lose \$100. The error was corrected in the April 25 issue. Since information articles tend to be written in a spirit of optimism, the editor sincerely apologizes for the mistake.]

Eugene T. Gossen, Public Relations Manager, National Industries, Inc.

117 Broad St.
Milford, Conn.





Canopy actuator and
speed brake mechanism
on the McDonnell Banshee



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